PB90-234592

Final Response to BDAT Related Comments Document Mixed Radioactive Hazardous Wastes, Polynuclear Aromatic U Wastes Halogenated Aliphatic U Wastes, Non-Halogenated Aromatic U Wastes F002-F006, F019. Volume 1-J

(U.S.) Environmental Protection Agency, Washington, DC

May 90

U.S. Department of Commerce
National Technical Information Service
NTIS

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. EPA/530-SW-90-061L	2.	3. Recipient's Accession No. **PB90 234592/AS**

4. Title and Subtitle
FINAL RESPONE TO BDAT RELATED COMMENTS DOCUMENT: MIXED RADIOACTIVE HAZARDOUS WASTES; POLYNUCLEAR AROMATIC U WASTES; HALOGENATED ALIPHATIC U WASTES; NON-HALOGENATED AROMATIC U WASTES; F002-F006, F019 (VOL. I-J)

5. Report Date
MAY 1990

6.

7. Author(s)
ROSENGRANT/CRAIG/OSW

8. Performing Organization Rept. No

9. Performing Organization Name and Address
U.S. EPA
Office of Solid Waste
401 M. Street SW
Washington, DC 20460

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address

13. Type of Report & Period Covered
RESPONSE TO COMMENTS 9/90

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

This response to comments document only addresses those comments which were submitted on the proposed land disposal restrictions for those waste codes and general BDAT technologies and issues which related to Third Third Wastes Treatment STandards.
The commenters presented in this document are grouped according to major concerns of the commenters.

17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement RELEASE UNLIMITED	19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 0
	20. Security Class (This Page) UNCLASSIFIED	22. Price 0

(See ANSI-Z39.18)

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)

EPA/530-SW-90-061L

PB90-234592

FINAL
RESPONSE TO BDAT RELATED COMMENTS DOCUMENT

Mixed Radioactive Hazardous Wastes
Polynuclear Aromatic U Wastes
Halogenated Aliphatic U Wastes
Non-halogenated Aromatic U Wastes
F002-F005: Solvents
F006: Electroplating WW Treatment Sludges
and
F019: Aluminum Conversion Coating Treatment Sludges

VOLUME I-J

Larry Rosengrant, Chief
Treatment Technology Section

Rhonda Craig
Project Manager

U.S. Environmental Protection Agency
Office of Solid Wastes
401 M Street S.W.
Washington, DC 20460

May 1990

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL
INFORMATION SERVICE
SPRINGFIELD, VA 22161

INTRODUCTION

This response to comments document only addresses those comments which were submitted on the proposed land disposal restrictions for those waste codes and general BDAT technologies and issues which relate to Third Third Wastes Treatment Standards.

The commenters presented in this document are grouped according to major concerns of the commenters. This document is comprised of the following sections:

ISSUE CODE 1: General BDAT Aspects
ISSUE CODE 2: D001 - Characteristic Ignitable Wastes
ISSUE CODE 3: D002 - Characteristic Corrosive Wastes
ISSUE CODE 4: D003 - Characteristic Reactive Wastes and P and U Wastes Containing Reactive Listing Constituents
ISSUE CODE 5: D004/D010 - Characteristic Wastes for Arsenic and Selenium and K, P, and U Wastes Containing Arsenic and Selenium
ISSUE CODE 6: D005 - Characteristic Wastes for Barium and P013
ISSUE CODE 7: D006 - Characteristic Wastes for Cadmium
ISSUE CODE 8: D007 - Characteristic Wastes for Chromium
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ISSUE CODE 10: D009 - Characteristic Wastes for Mercury P and U Wastes Containing Mercury
ISSUE CODE 11: K044, K045, K047: Wastes from the Manufacturing and Processing of Explosives
ISSUE CODE 12: D011 - Characteristic Wastes for Silver
ISSUE CODE 13: P119, P120 - Vanadium Containing Wastes
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ISSUE CODE 25: K015 - Still Bottoms from Benzal Chloride

ISSUE CODE 26: K021 - Spent Antimony Catalyst.

(No Comments Were Received for this Waste Code)

ISSUE CODE 27: K046 - WW Treatment Sludges from Manufacturing, Formulating, and Loading of Lead-Based Initiating Compounds

ISSUE CODE 28: K060 - Ammonia Still Lime Sludge.

(No Comments Were Received for this Waste Code)

ISSUE CODE 29: K061 - Electric Arc Furnace Dust

ISSUE CODE 30: K069 - Emission Control Dust/Sludge from Secondary Lead Smelting

ISSUE CODE 31: K071, K106 - Mercury Cell Process Wastes

ISSUE CODE 32: K073 - Chlorinated Hydrocarbon Wastes.

(No Comments Were Received for this Waste Code)

ISSUE CODE 33: K086 - Residues from Ink Formulation

ISSUE CODE 34: K100 - Waste Leaching Solution from Acid Leaching of Emission Control Dust/Sludge from Secondary Lead Smelting

(No Comments Were Received for this Waste Code)

ISSUE CODE 35: Wastes Containing Cyanide

ISSUE CODE 36: K017 - Wastes from the production of Epichlorohydrin

(No Comments Were Received for this Waste Code)

ISSUE CODE 37: K028,K029, K095, K096 - Production of 1,1,1-Trichloroethane

ISSUE CODE 38: Wastewaters containing BDAT Constituents

ISSUE CODE 39: K022 - Wastes from the Production of Phenol/Acetone

ISSUE CODE 40: K025 - Distillation Bottoms from the Production of Nitrobenzene

ISSUE CODE 41: K035 - WW Treatment Sludges from the Production of Creosote

ISSUE CODE 42: K026 - Stripping Still Tails from the Production of Methyl Ethyl Pyridine

(No Comments Were Received for this Waste Code)

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(No Comments Were Received for this Waste Code)

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(No Comments Were Received for this Waste Code)

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Commenters are identified by both commenter number and commenter name. Comments within each section of this document have been assigned a sequential comment number.

Issues were obtained from the original comment submittal and were categorized based on the grouping specified above. The Agency's response to each comment follows immediately after the text of the document. For responses related to capacity issues, the reader should review the "Response to Comments Background Document for the Third Third Land Disposal Restrictions Proposed Rule, November 22, 1989. Volume II Capacity Related Comments." For information regarding broad policy questions, the reader is directed to the "Response to Comments Background Document for the Third Third Land Disposal Restrictions Proposed Rule, November 22, 1989. Volume III Policy Related Comments."

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No Comments Were Received for this Waste Code

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ISSUE CODE 15: Mixed Radioactive Hazardous Wastes

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B. Radioactive Mercury Wastes
C. Radioactive Zirconium Fines
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COMMENT NUMBER: 15-A-1

DOCKET NUMBER: LD12-00079

COMMENTER: Department of the Navy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive lead Wastes

COMMENT:

This letter provides comments on behalf of the U.S. Naval Nuclear Propulsion Program on the proposed treatment standard for D008, high lead subcategory, nonwastewater, issued as part of the proposed rule for Land Disposal Restrictions for the third "Third" of Scheduled Wastes in the November 22, 1989 Federal Register.

The Naval Nuclear Propulsion Program is a joint Department of Energy/Department of the Navy organization responsible for all facets of naval nuclear propulsion, including the overhauling, refueling and servicing of the propulsion plants of nuclear powered ships, disposal of radioactive waste created in the process of such work, and the ultimate disposition of naval nuclear reactor plants. One of our key waste disposal activities is the disposal of reactor compartments removed from defueled submarines being deactivated.

The submarine reactor compartment disposal program was the subject of an extensive environmental analysis, which resulted in the May 1984 issuance of an Environmental Impact Statement. The EIS, which was concurred in by EPA, established that land burial of the compartments was an environmentally acceptable alternative. The reactor compartments are currently being disposed of at the Department of Energy's (DOE) Hanford reservation. Because each reactor compartment contains over 100 tons of lead as radiation shielding and ballast, actions are underway to obtain permits for the Hanford burial trench under the Washington State Administrative Code provisions implementing the State's authority under the Resource Conservation and Recovery Act (RCRA).

The comments which we are supplying on the proposed rule derive from our knowledge and experience with reactor compartment disposal described above, as well as disposal of radioactive waste using lead-shielded containers.

With respect to the reactor compartments, the lead present at the time of burial is completely encapsulated behind or within the metal of the submarine hull and structure. To remove all of the lead would entail significant personnel radiation exposure (over 100 man-rem per reactor compartment) and substantial expense (over $10 million per reactor compartment). Since the bulk of the lead is protected by over one inch of steel, with smaller portions behind metal plates that are 3/8 inch thick, the Navy is in the process of developing a detailed analysis to be

COMMENT NUMBER: 15 - A - 1 (continued)

DOCKET NUMBER: LD12-00079

COMMENTER: Department of the Navy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Lead Wastes

COMMENT:

supplied to the State of Washington and EPA Region X showing that the lead is expected to remain contained within the reactor compartment package in excess of several hundred years, well beyond the normal period of concern for post-closure of RCRA burial grounds. Naturally, the arid environment of the Hanford burial ground is conducive to this containment.

For the reasons cited above, it is vitally important to the Navy that the restrictions on land burial of lead contemplated in your proposed rule not preclude continuation of the submarine reactor compartment disposal effort. In our view, disposal of the lead present in the reactor compartment packages as part of the packages is the "Best Demonstrated Available Technology" for this unique application.

With respect to the use of lead as shielding in radioactive waste disposal containers, we note that the proposed rule requires the use of thermal recovery (i.e., melting and recovering the lead) as a treatment standard for non-wastewater, non-radioactive wastes containing more than 2.5% lead. This appears to be inconsistent with the position taken by the Office of Solid Waste in a letter dated June 26, 1987 to the Rocky Mountain Compact region, copy attached. The letter states "...lead whose primary use is shielding in low-level waste disposal operations is not subject to Federal hazardous waste regulations when placed on the land as part of its normal commercial use..." The policy contained in that letter is well founded as removal of the lead is likely to entail personnel radiation exposure. Further, the package in which the lead exists is already designed to provide a high degree of containment since its intended use is for disposal of radioactive materials. Within the Naval Nuclear Propulsion Program, recognizing the environmental burden imposed through use of lead, we minimize its use in new radioactive material disposal containers; nonetheless, lead is more prevalent in older designs.

To resolve or mitigate the concerns cited above, the Naval Nuclear Propulsion Program recommends that EPA consider two alternatives. The first would be to clarify in the final rule that lead shielding used in radioactive waste disposal continues to serve a functional purpose, and that it is therefore not a waste and is not subject to a treatment standard prior to land disposal. This is consistent with the June 1987 EPA letter. We recognize that if this were done, we would still need to obtain a Washington State Dangerous Waste permit for our reactor

COMMENT NUMBER: 15-A-1 (continued)

DOCKET NUMBER: LD12-00079

COMMENTER: Department of the Navy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Lead Wastes

COMMENT:

compartment packages since the State regulations prevail, but adopting this approach remains advantageous owing to its technical justification and applicability to our other waste activities.

The second alternative entails establishing encapsulation of the lead as a treatment standard for that lead contained in radioactive waste packages, and then defining specific technical criteria for encapsulation, such as encapsulation time or encapsulation media.

We appreciate the opportunity to comment on the proposed EPA rule and wish to emphasize how important we view the adoption of conservative yet reasonable standards, as described above, to permit us to continue to responsibly meet our environmental and programmatic commitments. Should you desire any further information, please feel free to contact me at 602-1695.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 26 1987

[illegible] Dept. of Ecology JUL 0 [illegible] 1987

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

Mr. Terry Husseman
Chair, Northwest Interstate
  Compact Committee
Washington Department of Ecology
PV-11
Olympia, Washington 98504

Dear Mr. Husseman:

Thank you for your letter of May 23 in which you requested guidance on treatment and disposal methods for low-level waste that contains uncontaminated lead used as shielding, surface contaminated lead and activated lead.

COMMENT NUMBER: 15-A-1 (continued)

DOCKET NUMBER: LD12-00079

COMMENTER: Department of the Navy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Lead Wastes

COMMENT:

First, I would like to address activated or radioactive lead. As you know, lead is not a naturally occurring radionuclide. Lead may become radioactive or activated as a result of neutron bombardment while being used as shielding in nuclear power plants, for example. Such activated lead, if short-lived, may be stored to allow radioactive decay prior to disposal. The resultant non-activated or elemental lead may be disposed of as hazardous waste in a hazardous waste disposal facility. If storage for decay is impractical, the activated lead must be managed as mixed waste. You should note, however, that in States authorized to administer the Federal mixed waste program or in States with Federally administered hazardous waste programs, any storage of mixed waste in excess of ninety days for generators and ten days for transfer facilities would require a Resource Conservation and Recovery Act (RCRA) permit. Similarly, designated storage facilities must obtain a RCRA permit.

Lead which is contaminated on the surface may be decontaminated by a number of commercially available processes. However, because lead is malleable and easily gouged or pitted, radioactive contamination is often not limited to the surface and may be imbedded in the lead itself. Where decontamination is incomplete or contraindicated because of occupational health considerations, the lead must be managed as a mixed waste. Also, EPA's Office of Radiation Programs is developing a standard which will delineate levels of radiation which are below regulatory concern (BRC). Once BRC levels have been established, it may be possible to dispose of lead which exhibits BRC levels of radioactive contamination as a hazardous waste.

Lead containers or container liners which are used as shielding in low-level waste disposal operations pose a unique problem. Containers or container liners are not regulated by the Agency (See 40 CFR 261.7) nor would they be a waste because they are fulfilling intended uses. ((CF 40 CFR 261.2(c)(1)(ii)). In this instance, containers or liners may be analogous to commercial chemical products (e.g., pesticides) where as a product, their normal use is placement on the land. Therefore, lead whose primary use is shielding in low-level waste disposal operations is not subject to Federal hazardous waste regulations when placed on the land as part of its normal commercial use.

COMMENT NUMBER: 15-A-1 (continued)
DOCKET NUMBER: LD12-00079
COMMENTER: Department of the Navy
ISSUE: Mixed Radioactive Hazardous Wastes
SUBISSUE: Radioactive Lead Wastes
COMMENT:

Encapsulation represents a viable mechanism for mitigating the hazardous waste characteristic lead may exhibit upon EP toxicity testing only in specific circumstances. The EP toxicity test procedure requires grinding the waste into pieces not greater than one square centimeter in size prior to extraction. Therefore, encapsulation would result in a non-hazardous waste only in those instances where it could be demonstrated that the encapsulation process results in a product that would not degrade after disposal, (i.e., is resistant to degradation or fracturing when placed in the land disposal environment). In such instances, you could petition the Agency to waive the EP toxicity test requirement. Additionally, the Agency is revising existing EP toxicity test procedures. Work is underway to develop procedures for evaluating a waste's long term physical stability. These procedures may then be used demonstrate that the encapsulated material will not degrade and allow testing of an intact lead brick or the like, for example.

The Agency has not evaluated specific technologies for encapsulation of lead or other wastes, nor has the Agency performed specific laboratory analyses of materials to determine their resistance to the EP toxicity test. However, a polymer or some other material which maintains its integrity under environmental stress would seem to be suitable.

In view of the urgency of the lead issue, it may be prudent to explore the feasibility of obtaining both a Nuclear Regulatory Commission license and an EPA permit to provide for the disposal of mixed waste.

If I can be of further assistance, do not hesitate to contact me.

Sincerely yours,

Jeffery D. Denit

Marcia E. Williams, Director
Office of Solid Waste

cc: Alan Corson
Floyd Galpin
Ken Shuster

Comment Number: 15-A-1
Docket Number: LD12-00079
Commenter: Department of the Navy
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Radioactive Lead Wastes
Response:

The Agency agrees that disposal of submarine reactor compartments represents a unique application of the land ban treatment standards. At issue is the 100 tons of radioactive lead shielding surrounding the nuclear reactor that displays the characteristic of toxicity for lead.

The Agency has developed a treatment standard expressed as a required method of treatment for such radioactive wastes. The Agency is specifying macroencapsulation as a method of treatment as the standard. Macroencapsulation involves taking waste that has been previously dewatered and enclosing it in a coating or jacket of inert material that serves to reduce the leachability potential of the waste. In addition, the encapsulated waste exhibits stability to mechanical, physical, and chemical stresses of handling, transporting, and final disposal. The Agency believes that the submarine hull and structure meet these criteria; therefore, such disposal of radioactive lead shielding meets the treatment standard and may be land disposed.

COMMENT NUMBER: 15-A-2
DOCKET NUMBER: LD12-00118
COMMENTER: Sandia National Laboratories
ISSUE: Mixed Radioactive Hazardous Wastes
SUBISSUE: Radioactive Lead Wastes
COMMENT:

1. Mixed Waste Comments

A proposed treatment standard (expressed as specified technology) for radioactive lead solids was described in III.A.5.f (pg 48439). Note that lead solids include, but are not limited to, all forms of lead shielding, lead "pigs," and other elemental forms of lead. The treatment standard for radioactive lead solids includes surface deactivation or removal of radioactive lead portions followed by encapsulation; or direct encapsulation of radioactive lead solids.

The text of states: "radioactivity penetrates slowly into one side of the lead (shield), thus providing the necessary protection. Therefore, depending upon the thickness of the lead shield, the radioactive portion of the lead may be able to be shaved off from the nonradioactive portion."

This statement needs clarification. Lead is a high density material that is used as a shielding for gamma radiation. The gamma-ray penetrates the lead and eventually gives up all of it's energy to an electron via photoelectric interactions. The lead does not become contaminated during these interactions.

Lead can become contaminated if a radioactive waste comes into contact with the lead surface. In most cases this is removable surface contamination and can be deconned using conventional non-hazardous wipes or rags. The wipes or rags could then be encapsulated as discussed in the Federal Register. This would dramatically reduce the volume of mixed waste. The remaining lead would have to be surveyed for both loose and fixed radioactive contamination to ensure the decontamination was effective.

If the radioactive constituents are "fixed" onto the surface of the lead then the treatment technology described in the Federal Register may be applicable. However, the safety hazards of this practice must be taken into account, and a cost vs benefit analysis performed. Generating radioactive lead shavings could result in substantial inhalation hazards. In addition, great care must be taken to prevent release and to ensure containment for encapsulation. It would be very difficult to reach all lead surfaces in a conventional "pig." Lastly, this approach could lead to significant personnel exposure depending on the contributing radionuclide.

Another way that lead can become radioactively contaminated is when introduced to a flux of neutrons. Various stable isotopes of the lead can become activated. The activated atoms would be distributed throughout the thickness of the lead so that scraping the surface would not be feasible for decontamination purposes.

Comment Number: 15-A-2
Docket Number: LD12-00118
Commenter: Sandia National Laboratories
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Radioactive Lead Wastes
Response:

The commenter suggests that lead may become radioactive if it comes into surface contact with radioactive wastes. The commenter suggests that appropriate treatment would be to surface decontaminate the lead with wipes or rags and then macroencapsulate the wipes or rags. The Agency disagrees that the wipes or rags should be encapsulated. If the wipes or rags are contaminated with mixed waste and display the toxic characteristic for lead, they are considered "organic debris" (see Preamble Section III.A.3.a.(2)). The treatment standard for organic debris is incineration in compliance with the operating standards of 40 CFR 264 and 265, Subpart O, followed by stabilization of the ash. If the wipes or rags are only contaminated by radioactive material, they are not considered mixed waste, and therefore, are not subject to RCRA requirements.

The commenter also suggests that the treatment practice discussed in the proposed preamble, that of shaving the radioactive portion of the lead surface off the radioactive lead shielding for subsequent treatment, leaving the nonradioactive lead to meet the treatment standard for lead, presents a safety hazard and should be subject to a cost vs. benefit analysis. The Agency agrees with the commenter that such a practice may create a health hazard which EPA may analyze in determining if a treatment standard minimizes threats. This point is moot because there is no requirement to shave the radioactive portion of the lead shielding promulgated as part of the treatment standard; however, such shaving is considered pretreatment and, as such, is not precluded by the treatment standard.

COMMENT NUMBER: 15-A-3
DOCKET NUMBER: LD12-L0007
COMMENTER: CMA
ISSUE: Mixed Radioactive Hazardous Wastes
SUBISSUE: Radioactive Lead Wastes
COMMENT:

T. The Agency's Proposed Treatment Standard of "Surface Deactivation or Removal of Radioactive Lead" for D008 Wastes Is Not Demonstrated or Available Technology.

The Agency has concocted a treatment methodology for nonwastewaters containing radioactive lead that incorporates "deactivation" or removal of radioactive lead from nonradioactive lead so that the two can be managed separately. 54 Fed. Reg. at 48,439. This is based on the Agency's theory that most radioactive lead will be found as a thin layer on lead shielding, and that the depth of this layer can be accurately determined and shaved off from the nonradioactive portion of the shield.

This technology is neither demonstrated nor available, but is based on speculation. As such, it should not be promulgated as BDAT. EPA has not presented any data showing that the depth of radioactive lead on a shield can be accurately measured, nor are any data available to demonstrate that radioactive lead can be carefully shaved off of shields, which come in a vast variety of shapes and sizes. RCRA does not allow EPA to substitute speculation for technical data in selecting BDAT.

EPA should eliminate the radioactive lead separation step from the defined BDAT standards for D008 nonwastewaters. The remaining part of the standard, direct encapsulation of radioactive lead solids, would still allow generators that could separate the radioactive lead from the nonradioactive lead to do so.

Comment Number: 15-A-3

Docket Number: LD12-L0007

Commenter: CMA

Issue: Mixed Radioactive Hazardous Wastes

Subissue: Radioactive Lead Wastes

Response:

The Agency has information that, in most cases, the radioactive contamination is due to contact with radioactive wastes rather than in its function as shielding material. This being the case, the Agency expects that the radioactivity will be primarily surface contamination and thus could be amenable to surface deactivation. The Agency believes, however, there is some merit to the commenter's assertion that this is not a "demonstrated" treatment technique. The Agency has promulgated a treatment standard expressed as a required method of treatment: macroencapsulation. Surface deactivation is not precluded by this treatment standard; it is considered pretreatment as long as the radioactive lead is ultimately treated by the required method of treatment.

COMMENT NUMBER: 15-A-4

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Lead Wastes

COMMENT:

10) 54 FR 48439, Radioactive Lead Solids Subcategory

The EPA has proposed BDAT treatment standards for D008 radioactive lead solids of "Surface Deactivation or Removal of Radioactive Lead Portions followed by Encapsulation; or Direct Encapsulation of Radioactive Lead Solids as Methods of Treatment". The DOE supports the establishment of the radioactive lead solids subcategory in the proposed rule. It is felt, however, that there is need for further clarification on two points: 1) definition of "radioactive lead solids" - the DOE manages the disposal of large pieces of waste equipment containing elemental lead that served a biological or instrument shielding purpose. These pieces of equipment can be highly radioactive and retrieval of the lead is not considered feasible in light of worker exposure and sometimes equipment configuration. DOE requests that EPA clarify that these forms of waste are contained in the radioactive lead solids subcategory; 2) definition of "encapsulation" - no standards or criteria are presented that identify viable "encapsulation" techniques. It may be appropriate for EPA to detail in the final rule that "encapsulation" standards for a particular waste will be developed on a case-by-case basis, perhaps as specified in the permit or waste analysis plan for the TSD facility. Examples of encapsulation used at DOE facilities include the intrinsic nature of the waste equipment, applied epoxies or coatings, packages that exceed radioactive waste Class C packaging requirements, and encapsulation in stainless steel. Further clarification is requested on the definition of encapsulation and whether encapsulation of radioactive lead solids, by the means listed above, would meet the proposed standard. Clarification on encapsulation of lead could be provided by defining specific criteria for encapsulation (such as encapsulation time and/or media). For example, a minimum containment time might be identified for the hazardous constituents (e.g., 30 years, as specified in RCRA post-closure period requirements).

An associated issue under this comment that DOE would like EPA to consider is the applicability of the land disposal restrictions to "lead shielding of radioactive waste packages" that are intended for disposal. The primary example of such a material is the reactor compartments from deactivated nuclear submarines. The lead is completely encapsulated behind or within the metal of the submarine hull and structure. Upon burial the lead is expected to remain encapsulated for several hundred years.

COMMENT NUMBER: 15-A-4 (continued)

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Lead Wastes

COMMENT:

The applicability of the proposed lead treatment standards to lead shielding of radioactive waste packages is unclear, and may conflict with previous EPA policy. In a letter dated June 26, 1987 to the Rocky Mountain Compact region, the position stated by the Office of Solid Waste is that "...lead whose primary use is shielding in low-level waste disposal operations is not subject to Federal hazardous waste regulations when placed on the land as part of its normal commercial use...". This policy is protective of human health and the environment because to remove the lead is likely to cause radiation exposure. DOE believes, as stated in the EPA letter, that the lead shielding of radioactive waste packages as described in this comment in not a waste and requests that EPA clarify this. If EPA asserts that lead shielding of radioactive waste packages is hazardous waste, then DOE requests that these shielding materials be included in the radioactive lead solids subcategory with encapsulation as the method of treatment.

Comment Number: 15-A-4

Docket Number: LD12-00198

Commenter: Department of Energy

Issue: Mixed Radioactive Hazardous Wastes

Subissue: Radioactive Lead Wastes

Response:

The radioactive lead solids subcategory includes all forms of radioactive mixed waste containing elemental lead (including discarded equipment containing elemental lead that served a personnel- or equipment-shielding purpose prior to becoming hazardous waste). These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ash that can undergo conventional pozzolanic stabilization, nor do they include organolead materials that can be incinerated and then stabilized as ash.

The treatment standard, macroencapsulation, may include surface coating with materials such as polymeric organics or hardening resins. It may also include enclosing the waste in a coating or jacket of inert material that will meet the criteria of reduced leachability and stability to mechanical, physical, and chemical stresses of handling, transporting, and final disposal. The Agency does not agree that such determinations should be made on a case-by-case basis because it would create implementation and enforcement inconsistencies.

[The commenter is referred to comment 15-A-1 from the Department of the Navy in this document for clarification on treatment of submarine reactor compartment lead shielding.]

Comment Number: 15-A-4 (continued)
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Radioactive Lead Wastes
Response:

The applicability of the promulgated treatment standards to lead shielding used in low-level waste disposal operations that serves the purpose of "containers" (i.e., whose primary use is shielding in low-level waste disposal operations and is placed on the land as part of its normal commercial use) is at present unclear. the Agency plans to revisit this issue during the two-year national capacity extension.

COMMENT NUMBER: 15-A-5
DOCKET NUMBER: LD12-00226
COMMENTER: US Ecology
ISSUE: Mixed Radioactive Hazardous Wastes
SUBISSUE: Radioactive Lead Wastes
COMMENT:

MIXED WASTE

The D008 Radioactive Lead Solids subcategory does not describe when "lead shielding" becomes waste. A general understanding in the industry is that the lead pigs, when disposed, are containers and not waste. The same principle applies to shielding within a container of higher level waste. Under RCRA's definition of solid waste, these lead items are not waste. More clarification is needed. Also, additional clarification is required on 1) the definition of encapsulation for lead sheilding, 2) is Pb 210 included as a D008 reactive solid, and 3) is the waste still "mixed" if the RCRA treatment standards are met, understanding the limited national disposal capacity for mixed waste.

Comment Number: 15-A-5
Docket Number: LD12-00226
Commenter: USEcology
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Radioactive Lead Wastes
Response:

The applicability of the promulgated treatment standards to lead shielding used in low-level waste disposal operations that serves the purpose of "containers" (i.e., whose primary use is shielding in low-level waste disposal operations and is placed on the land as part of its normal commercial use) is at present unclear. The Agency plans to revisit this issue during the two-year national capacity extension.

The final treatment standard, macroencapsulation, includes the use of a surface coating such as polymeric organics or hardening resins, or a jacket of inert material, to substantially reduce surface exposure to potential leaching media. This definition is found in 40 CFR 268.42, Table 1, under the five-letter code MACRO.

The commenter asks whether lead 210 is a D008 reactive solid. If such lead displays the characteristic of toxicity for lead, it is included in the definition of a radioactive mixed waste, D008 lead subcategory.

The commenter asks whether a waste is still considered a mixed waste if the RCRA treatment standards are met. In the case of a listed hazardous waste mixed with radioactive waste, even if the treatment standard is met, it is still a RCRA hazardous waste. Such a waste, however, could be land disposed (if appropriate for the radioactive component). In the case of a characteristic hazardous waste for which a

Comment Number: 15-A-5 (continued)
Docket Number: LD12-00226
Commenter: USEcology
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Radioactive Lead Wastes
Response:

treatability group has been specified, even if the required method of treatment has been used, it is still considered a RCRA hazardous waste (but could be land disposed). In the case of a characteristic waste for which a separate treatability group has not been established, and for which the treatment standard is a level equivalent to the characteristic level, if the waste is treated to meet the treatment standard (a level below the characteristic level) it is no longer a hazardous waste; therefore, such would no longer be considered a mixed waste.

COMMENT NUMBER: 15-A-6

DOCKET NUMBER: LD12-00167

COMMENTER: Westinghouse Electric Corporation

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Lead Wastes

COMMENT:

RADIOACTIVE LEAD SOLIDS SUBCATEGORY - (54 FR 48439)

Westinghouse strongly supports the establishment of the radioactive lead solids subcategory. However, further clarification of the definition of "radioactive lead solids" is needed. Large pieces of waste equipment containing elemental lead that served a biological and/or instrument shielding purpose have been and will continue to be generated. These pieces of equipment can be highly radioactive, and retrieval of the lead is not always feasible in light of potential worker exposure and sometimes equipment configuration. EPA should clarify that this type of waste is included in the subcategory defined as radioactive lead solids.

In addition, EPA should consider encapsulation standards in the final rule or allow for these standards to be specified on a case-by-case basis, perhaps as part of the permit for the treatment, storage or disposal (TSD) facility. Examples of encapsulation techniques include the application of epoxies or coatings, the intrinsic nature of a waste package, or units that are packaged to exceed the Nuclear Regulatory Commission (NCR) radioactive waste Class C packaging requirements.

Comment Number: 15-A-6
Docket Number: LD12-00167
Commenter: Westinghouse Electric Corporation
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Radioactive Lead Wastes
Response:

The radioactive lead solids subcategory includes all forms of radioactive mixed waste containing elemental lead (including discarded equipment containing elemental lead that served a personnel- or equipment-shielding purpose prior to becoming hazardous waste). These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ash that can undergo conventional pozzolanic stabilization, nor do they include organolead materials that can be incinerated and then stabilized as ash.

The treatment standard, macroencapsulation, may include surface coating with materials such as polymeric organics or hardening resins. It may also include enclosing the waste in a coating or jacket of inert material that will meet the criteria of reduced leachability and stability to mechanical, physical, and chemical stresses of handling, transporting, and final disposal. The Agency does not agree that such determinations should be made on a case-by-case basis because it would create implementation and enforcement inconsistencies.

COMMENT NUMBER: 15 - A - 7
DOCKET NUMBER: LD12 - 00159
COMMENTER: Waste Management, Inc.
ISSUE: Mixed Radioactive Hazardous Wastes
SUBISSUE: Radioactive Lead Wastes
COMMENT:

3. D008 Wastes

Clarification is needed under proposed 40 C.F.R. § 268.42 regarding the treatment technology for D008 radioactive lead solids. EPA has specified a treatment technology for these wastes of "surface deactivation or removal of radioactive lead portions followed by encapsulation; or direct encapsulation." 54 Fed. Reg. at 48,513. The Agency should clarify in the final rule that the generator has the authority to determine when the radioactive lead ~~portions can be deactivated or removed prior~~ to encapsulation. Clarification is also needed ~~as to what~~ constitutes proper "encapsulation" for these materials under 40 C.F.R. § 268.42.

Comment Number: 15-A-7
Docket Number: LD12-00159
Commenter: Waste Management, Inc.
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Radioactive Lead Wastes
Response:

The radioactive lead solids subcategory includes all forms of radioactive mixed waste containing elemental lead (including discarded equipment containing elemental lead that served a personnel- or equipment-shielding purpose prior to becoming hazardous waste). These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ash that can undergo conventional pozzolanic stabilization, nor do they include organolead materials that can be incinerated and then stabilized as ash.

The Agency agrees that the generator has the authority to determine when surface deactivation is appropriate. Surface deactivation is considered pretreatment and is not precluded by the final treatment standard.

The treatment standard, macroencapsulation, may include surface coating with materials such as polymeric organics or hardening resins. Macroencapsulated wastes have reduced leachability potential and exhibit stability to mechanical, physical, and chemical stresses of handling, transporting, and final disposal. Therefore, macroencapsulation may also include enclosing the waste in a coating or jacket of inert material that will meet the above criteria (i.e., reduced leachability, stability).

COMMENT NUMBER: 15-A-8

DOCKET NUMBER: LD12-00117

COMMENTER: Exide Corporation

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Lead Wastes

COMMENT:

Proposed Treatment Standards for Radioactive Lead Solids (Including All Forms of Lead Shielding and Other Forms of Elemental Forms of Lead)

The EPA has proposed surface deactivation or removal of radioactive lead portions followed by encapsulation or direct encapsulation of radioactive lead solids as BDAT treatment methods.

Exide Corporation believes that secondary lead smelting for metals recovery following surface deactivation or removal of radioactive lead portions, is also a viable option for treatment of these materials. Since secondary lead smelting for metals recovery is consistent with the RCRA goals of waste minimization and recycling, Exide Corporation believes that secondary lead smelting following surface deactivation should be provided as a BDAT option.

Comment Number: 15-A-8
Docket Number: LD12-00117
Commenter: Exide Corporation
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Radioactive Lead Wastes
Response:

The Agency agrees with this commenter. If lead shielding has undergone surface decontamination or removal of radioactive lead portions, the nonradioactive lead may be recovered using secondary lead smelting techniques. Any residue from subsequent treatment of nonradioactive lead must meet the treatment standard for D008, characteristic lead wastes.

COMMENT NUMBER: 15-B-1

DOCKET NUMBER: LD12-00053

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Mercury Wastes

COMMENT:

Docket:

The United States Department of Energy (DOE) is pleased to respond to the Proposed Rulemaking on Land Disposal Restrictions for Third Third Scheduled Wastes, issued on November 22, 1989 (54 FR 48372). In this proposed rulemaking, it was requested that all new data submitted during the comment period be provided within 30 days (i.e., December 22, 1989). DOE would like to take this opportunity to resubmit information and data on the treatment of high level radioactive mixed waste that was provided to the U.S. Environmental Protection Agency (EPA) in an earlier package, dated September 26, 1989. Furthermore, the Department is today providing additional materials supplemental to the information provided in the above mentioned package.

As the Department has asserted in the past, many of the treatment standards and corresponding technologies established and proposed for hazardous wastes are inappropriate for much of DOE's radioactive mixed waste (i.e., radioactive and hazardous waste). Treatment technologies applicable to hazardous wastes may not allow for the safe treatment and handling of both the radiological and chemical hazards associated with radioactive mixed wastes. One such DOE waste that presents unique difficulties in treatability is high level radioactive mixed waste (HL-RMW) that is generated from the chemical processing of nuclear reactor fuels and targets.

A demonstrated method for treating this high level waste is vitrification. Due to the highly radioactive component of HL-RMW, and the need to prevent or minimize potential radiation exposure to workers, the public and the environment, the Department has pursued the development of this method for treating DOE's high level wastes in order to achieve a final waste form that offers long-term stability and protection.

Vitrified HL-RMW will be placed in stainless steel canisters in order to insure that the wastes are safely stored, and eventually transported for disposal in a future high level waste geologic repository. DOE is proceeding with the development of waste vitrification plants at three facilities: Savannah River Site (South Carolina), Hanford (Washington), and the West Valley Demonstration Project (New York). The vitrification plant at the Savannah River Site is about 90% complete; at Hanford, a $ 550 million contract was recently signed to build a waste vitrification plant; and at West Valley, the process is scheduled to begin in the mid 1990's. The vitrification process for HL-RMW at Idaho National Engineering Laboratory is in the initial stages of development.

COMMENT NUMBER: 15-B-1 (continued)

DOCKET NUMBER: LD12-00053

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Mercury Wastes

COMMENT:

In a data package being resubmitted today (titled: High Level Waste Vitrification for Hanford Waste Vitrification Plant and Defense Waste Processing Facility), the treatment performance data include results from simulated (i.e., nonradioactive) waste samples. These simulated samples were doped with concentrations 2-3 times the expected concentrations of hazardous constituents in the HL-RMW (based on a numerical analysis of all process streams in the Defense Waste Processing Facility, DWPF). These data include both EP Toxicity and Toxicity Characteristic Leaching Procedure (TCLP) results, and indicate that the vitrification process can achieve treatment levels below the level at which the waste exhibits the characteristic of EP Toxicity. Today, DOE is also submitting additional information and data relative to the vitrification process to support the establishment of treatment standards that specifically address HL-RMW.

With consideration to the attached documentation, DOE requests that EPA evaluate the establishment of a separate waste treatability group or waste code specific to HL-RMW. Furthermore, the Department requests that EPA develop corresponding treatment standards for the process wastes associated with the treatment of HL-RMW (separation of the low-level and high-level radioactive fractions is part of the HL-RMW treatment process). For the high level radioactive fraction of the process wastes, DOE requests that EPA establish high level waste vitrification as the treatment standard (i.e., specified technology). The remaining process wastes generally include low-level radioactive supernate solution/salts, low-level radioactive organic waste (e.g., benzene - a by-product of the precipitate hydrolysis process), and low-level radioactive mercury that will be recycled. DOE requests that EPA establish the following specified technologies as the treatment standards for these low-level radioactive process waste fractions: incineration of the low-level radioactive organic waste fraction; solidification of the low-level radioactive supernate solution/salts, and recycling of the low-level radioactive mercury.

To expand EPA's understanding of the HL-RMW vitrification process, the Department would like to invite (and encourages) EPA representatives to tour the Savannah River Site's Vitrification facility (the DWPF). If there is interest in a DWPF site visit, please let us know and the necessary arrangements will be made. Reports on high level waste vitrification and on the grouting (i.e., solidification) process for the Hanford low-level waste fraction (previously submitted to EPA on September 26, 1989), along with additional supplemental information relative to the

COMMENT NUMBER: 15-B-1 (continued)
DOCKET NUMBER: LD12-00053
COMMENTER: Department of Energy
ISSUE: Mixed Radioactive Hazardous Wastes
SUBISSUE: Radioactive Mercury Wastes
COMMENT:

vitrification process, are provided in the attached documentation. These documents contain descriptions of the vitrification treatment process, the process wastes associated with the vitrification facilities, information describing an alternate leach test - the Product Consistency Test (PCT), and actual sample results using the PCT procedure. If you have any questions regarding the data and information provided today, or with respect to setting up a DWPF site visit, please contact Thomas Traceski, Chief, RCRA/CERCLA Unit at 586-2481.

Comment Number: 15-B-1
Docket Number: LD12-00053
Commenter: Department of Energy
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Radioactive Mercury Wastes
Response:

The data provided to the Agency has been used to establish a separate treatability group for high-level radioactive mixed wastes containing the following characteristic wastes: corrosive wastes, arsenic, barium, cadmium, chromium, lead, mercury selenium, and silver. The treatment standard for this treatability group is vitrification. A definition of this required method of treatment can be found in 40 CFR 268.42, Table 1, under the five-letter code HLVIT.

As used in the facility design, the vitrification process will incorporate the high-level mixed waste into a glass matrix, achieving a reduction in the mobility of its hazardous and radioactive constituents. Following an evaluation of this data, the Agency made a site visit to the Savannah River Defense Waste Processing Facility (i.e., vitrification unit) in South Carolina. The Agency found this data and determinations made based on the site visit persuasive and, thus, established the treatability group requested by the commenter.

COMMENT NUMBER: 15-B-2

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Mercury Wastes

COMMENT:

11) 54 FR 48442, Standards for Radioactive Wastes Containing Mercury.

EPA has proposed a treatment standard for elemental mercury wastes contaminated with radioactive materials of "Amalgamation with Zinc as a Method of Treatment." DOE requests that amalgamation with gold be included as a method of treatment. This alternate method is necessary due to process requirements for tritium production. The amalgamation with gold provides a similar decrease in air emissions, decrease in mobility and potential reduction in leachability of the liquid mercury to zinc amalgamation.

Comment Number: 15-B-2

Docket Number: LD12-00198

Commenter: Department of Energy

Issue: Mixed Radioactive Hazardous Wastes

Subissue: Radioactive Mercury Wastes

Response:

The Agency proposed a treatment standard for radioactive wastes containing elemental mercury expressed as a method of treatment: Amalgamation with Zinc as a Method of Treatment (54 FR 48442). This proposed treatment standard was based on data involving the application of elemental zinc powder dampened with dilute sulfuric acid, thus forming a mercury amalgam. The final treatment standard is Amalgamation as a Method of Treatment. As explained in the preamble, other reagents such as copper, nickel, gold, and sulfur are also effective in forming mercury amalgamations, and they may be used to meet the treatment standard. A definition of the Amalgamation treatment standard is found in 40 CFR 268.42, Table 1, under the five-letter code AMLGM.

COMMENT NUMBER: 15 - B - 3

DOCKET NUMBER: LD12-00167

COMMENTER: Westinghouse

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Mercury Wastes

COMMENT:

EPA proposed that elemental mercury contaminated with radioactive materials [D009 and U151 (40 CFR 268.42(a)(7))] be treated by amalgamation with zinc (54 FR 48513). This treatment technology may not be appropriate for all radioactive materials.

Comment Number: 15-B-3

Docket Number: LD12-00167

Commenter: Westinghouse

Issue: Mixed Radioactive Hazardous Wastes

Subissue: Radioactive Mercury Wastes

Response:

The Agency agrees that amalgamation may not be appropriate for all radioactive materials (presumably containing mercury). The Agency notes, however, that this very vague comment did not include specific examples or data to be used to establish another treatability group and treatment standard.

The proposed treatment standard was based on data that indicated that it is effective in reducing the air emissions as well as reducing mobility by the formation of a paste-like substance. The Agency believes, based on available data, that amalgamation is BDAT for this mixed waste. In addition, roasting or retorting are not precluded by this treatment standard, as long as the residuals from such treatment comply with the amalgamation treatment standard. If the required treatment method is not appropriate for a mercury mixed waste, one may petition the Agency for a variance from the treatment standard (40 CFR 268.44) or make a showing of an alternative equivalent technology (40 CFR 268.42(b)). One of the requirements of such a petition is that the petitioner suggest the treatment technology that he or she thinks is BDAT, and provide data supporting such a determination. If granted, a new treatment standard for that specific waste sill be established.

COMMENT NUMBER: 15-C-1

DOCKET NUMBER: LD12-00064

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Zirconium Fines

COMMENT:

Docket:

On November 22, 1989, the proposed Land Disposal Restrictions for Third Third Scheduled Wastes were published in the Federal Register. All new data submitted during the comment period was requested within 30 days of this notice (i.e., by December 22, 1989). The U.S. Department of Energy (DOE) has reviewed the proposed treatment standards for characteristic hazardous wastes and offers the following comments specific to the Ignitable, Reactives Subcategory (54 FR 48421).

Provided as part of a data package submitted on September 26, 1989, for the U.S. Environmental Protection Agency's (EPA) review, DOE included a report describing performance results of a method of treatment intended to eliminate the hazardous characteristics of radioactive zirconium fines. Although this data was recognized in the Third Third proposed rule, EPA stated its concern that this treatment may be a form of impermissible dilution rather than a chemical reaction (i.e., oxidation) that removes the reactivity characteristic (54 FR 48421). Furthermore, EPA requested comment on whether stabilization is appropriate for radioactive zirconium fines.

The Agency's concern may arise partly due to the language used in the zirconium fines report. In developing a treatment process to manage this radioactive mixed waste, the Department needed to consider both the pyrophoric characteristics of the radioactive zirconium fines, and also that the treatment method be adaptable to remote handling techniques due to the radiation hazard. In the proposed treatment process, the radioactive zirconium fines are physically separated and immobilized in a cement monolith. The zirconium fines will be immobilized in this medium out of contact with air (i.e., the solidification medium separates and coats the fines), allowing natural oxidation to occur. The treatment method thereby stabilizes the pyrophoric characteristic of the zirconium fines, and the cement medium provides shielding from the radioactivity. Today, the Department is resubmitting its report on stabilization of zirconium fines (titled: Certification of Solidified Zirconium Fines for Disposal at the RWMC) and additional supplemental information relative to this report.

COMMENT NUMBER: 15-C-1 (continued)

DOCKET NUMBER: LD12-00064

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Zirconium Fines

COMMENT:

This information is being provided to support that DOE's stabilization process is in fact an appropriate deactivation treatment for radioactive zirconium fines. DOE requests that EPA establish this stabilization process as the treatment standard (i.e., specified technology) for radioactive zirconium fines.

In addition, DOE would like to take this opportunity to request copies of any additional data received by EPA during the comment period pertaining to the following preamble sections: III.A.4.b.- Ignitable Characteristic Wastes (particularly the Ignitable Reactive Subcategory); III.A.4.c. - Corrosive Characteristic Wastes; III.A.4.d. - Reactive Characteristic Wastes; III.A.5.b. - Arsenic and Selenium; III.A.5.c. - Barium; III.A.5.d. - Cadmium; III.A.5.e. - Chromium; III.A.5.f. - Lead (particularly the "Standards for Radioactive Lead Solids Subcategory"); III.A.5.g. - Mercury (particularly the section on "Standards for Radioactive Wastes Containing Mercury"); III.A.5.h. - Silver; and any new data regarding the treatment of radioactive mixed waste.

The report on stabilization of zirconium fines (previously submitted to EPA on September 26, 1989), along with additional supplemental information relative to this report, is provided in the attached documentation. If you have any questions regarding the information provided today relative to radioactive zirconium fines, or the preamble sections for which DOE is requesting copies of any additional data submitted during the comment period, please contact Thomas Traceski, Chief, RCRA/CERCLA Unit at 586-2481.

Comment Number: 15-C-1

Docket Number: LD12-00064

Commenter: Department of Energy

Issue: Mixed Radioactive Hazardous Wastes

Subissue: Radioactive Zirconium Fines

Response:

The Agency proposed a separate treatability group and corresponding treatment standard for the characteristic reactive mixed wastes radioactive zirconium fines. The Agency reconsidered the need for a separate treatability group for these wastes because the hazardous portion is similar to other nonradioactive hazardous wastes in the D001 Ignitable Reactive Subcategory. Additionally, the radioactive portion of this waste is amenable to certain treatment technologies suggested for use to meet the treatment standard of Deactivation as a Method of Treatment. The Agency has prepared for the final rule Appendix VI to 40 CFR 268. Appendix VI includes suggested technologies for meeting the Deactivation treatment standard and includes, for the D001 ignitable Reactive Subcategory, stabilization.

COMMENT NUMBER: 15-C-2

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Zirconium Fines

COMMENT:

Data has been submitted by DOE to support stabilization as a method of treatment for radioactive zirconium fines under the Ignitable Reactives Subcategory. DOE believes that stabilization is an appropriate deactivation treatment for radioactive zirconium fine wastes, as well as for certain other ignitable and reactive wastes.

3) 54 FR 48421, Treatment Standards for Radioactive Zirconium Fines (Ignitable Reactives Subcategory).

EPA is proposing a treatment standard of "Deactivation as a Method of Treatment" for wastes in the D001 Ignitable Reactives subcategory. EPA has included radioactive zirconium fines under this subcategory. EPA states that stabilization is not usually considered to be a method of deactivation, and EPA is concerned that this treatment may be a form of impermissible dilution rather than a chemical reaction (i.e., oxidation) that removes the reactivity characteristic. EPA has requested comment on whether stabilization is an appropriate treatment for radioactive zirconium fines.

DOE disagrees that stabilization of radioactive zirconium fines would constitute a form of impermissible dilution. Stabilization is a proven technique for the safe management of radioactive zirconium fines at DOE facilities. On December 22, 1989, DOE resubmitted a report to EPA, with additional supplemental information relative to the report, that supports this position. EPA's concern that the stabilization treatment method may be impermissible dilution possibly arises in part due to language used in the zirconium fines report. In determining an appropriate treatment for this type of waste, DOE needed to consider both the pyrophoric characteristics of the fines and that the treatment method immobilize the radioactive components, and be adaptable to remote handling techniques due to the radiation hazard. In the proposed treatment process, the radioactive zirconium fines are physically separated and immobilized in a cement monolith out of contact with air (i.e., the solidification medium separates and coats the fines), allowing natural oxidation to occur. The treatment method thereby stabilizes the pyrophoric characteristic of the zirconium fines, and the cement provides fixation of the radioactive components and shielding from the radioactivity.

COMMENT NUMBER: 15-C-2 (continued)

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Radioactive Zirconium fines

COMMENT:

Furthermore, EPA's suggested deactivation technologies such as open detonation and controlled deactivation with water are not applicable for an RMW such as the zirconium fines. The radioactivity will probably not be removed or deactivated with these technologies. On page 54 FR 48422, EPA states that ignitability reflects the presence of volatile organic compounds (VOC) which should be destroyed because they are ozone precursors which are a threat to human health and the environment. Metal fines are not VOC. Metal fines are stabilized to safely remove the ignitable reactive hazard, not to intentionally dilute the waste.

In addition to supporting stabilization as a treatment standard, DOE suggests placing this waste in a radioactive zirconium fines subcategory. There is justification for this because EPA has determined that within the Ignitable Reactive Subcategory there appears to be a further variety of different waste groups, each with a certain degree of uniqueness with respect to hazard and handling requirements. DOE agrees that radioactive zirconium fines are a unique waste and should be placed in a separate subcategory with stabilization, as described in the December 22, 1989, DOE report, as the treatment standard (i.e., specified technology).

6) 54 FR 48424, Proposed Treatment Standards for Reactive Characteristic Wastes.

DOE supports the allowance of any treatment technology that renders reactive wastes non-reactive, including stabilization as an acceptable method of treatment for certain wastes within this category. This is especially pertinent to RMW as demonstrated by information submitted on the treatment of ignitable reactive zirconium fines (see specific comment number 3).

Comment Number: 15-C-2

Docket Number: LD12-00198

Commenter: Department of Energy

Issue: Mixed Radioactive Hazardous Wastes

Subissue: Radioactive Zirconium Fines

Response:

The Agency proposed a separate treatability group and corresponding treatment standard for the characteristic reactive mixed wastes radioactive zirconium fines. The Agency reconsidered the need for a separate treatability group for these wastes because the hazardous portion is similar to other nonradioactive hazardous wastes in the D001 Ignitable Reactive Subcategory. Additionally, the radioactive portion of this waste is amenable to certain treatment technologies suggested for use to meet the treatment standard of Deactivation as a Method of Treatment. The Agency has prepared for the final rule Appendix VI to 40 CFR 268. Appendix VI includes suggested technologies for meeting the Deactivation treatment standard and includes, for the D001 ignitable Reactive Subcategory, stabilization.

COMMENT NUMBER: 15-D-1

DOCKET NUMBER: LD12-00118

COMMENTER: Sandia National Laboratories

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

Treatment Technologies

The EPA considers that the treatment standards established for solvents, dioxins, and California list wastes apply to those wastes that contain radioactivity. Restrictions for these wastes have been developed without considering the difficulties in treatment and waste analyses, associated personnel dose equivalent, environmental release of radioactivity, and lack of adequate treatment technology. Incineration of mixed waste (organics) has been used at other DOE facilities; however, permitting requirements are becoming increasingly stringent. Various regulations require stringent limits on emissions as well as management of the ash disposal. At SNL-Albuquerque, only a small fraction of our mixed waste (<5%) contains solvents which would fall under a potential treatment category of incineration. It should be noted that under New Mexico House Bill 59, there is currently a moratorium on most forms of incineration in the State of New Mexico. Incineration as a means to treat the hazardous component of mixed waste may result in increased radioactive air emissions and/or may concentrate the radioactivity concentrations (by mass) in the ash. Mixed waste incineration will probably be restricted to very low activity waste.

Chemical treatment of mixed waste may prove to be an option for some of Sandia's waste. However, because much of the waste has relatively high radiation (gamma-ray) exposure rates, treatment would have to be performed remotely in facilities designed for such type of work (e.g. hot cell facilities). Detailed analytical procedures would need to be developed since the physical and chemical nature of the radioactive atoms may be similar to those of the hazardous chemicals. Chemical treatment of mixed waste may prove beneficial for simple matrices; however, at Sandia, our mixed waste is composed of very complex matrices such as activated weapons hardware. This type of waste is very heterogeneous when it comes to physical and chemical makeup.

If the current restrictions on mixed solvents, dioxins, and California list wastes continue to apply as currently written, then Sandia may not be in full compliance since a significant portion of our waste cannot be analyzed because of the high activity. There are no analytical laboratories licensed to accept the activity concentrations that some of waste streams exhibit. Compliance with concentration-based standards cannot be demonstrated if the waste cannot be analyzed by a laboratory. Research is currently being performed on the use of SW-846 test methods as applied to mixed waste analyses.

Comment Number: 15-D-1
Docket Number: LD12-00118
Commenter: Sandia National Laboratories
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Other Radioactive Wastes
Response:

The subject of this comment, treatment technologies for mixed wastes containing prohibited solvent, dioxin, and California list wastes, is outside the scope of this rulemaking. The Agency notes, however, that the treatment standards for these mixed wastes are expressed as concentration-based standards, thus there is no requirement to incinerate these wastes. Chemical treatment, if it achieves the treatment standards, is acceptable treatment.

The Agency acknowledges that there are analytical problems associated with measuring compliance for radioactive mixed waste. To account for such problems, provisions for variances from the treatment standard are found at 40 CFR 268.42 and 268.44. One of the requirements of such a petition is that the petitioner suggest the treatment technology that he or she thinks is BDAT, and provide data supporting such a determination. If granted, a new treatment standard for that specific waste will be established.

COMMENT NUMBER: 15-D-2

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

SPECIFIC COMMENTS ON PROPOSED RULE

1) 54 FR 48418/48428, Creation of Separate Treatability Groups for Characteristic RMW.

As stated in the preamble, RCRA applies to radioactive mixed waste, independent of the classification of the radioactive component as low level, high level, or transuranic, but only to the hazardous portions of the mixed waste stream.

As indicated under the General Comments, characteristic RMW represents a large category of waste within the DOE complex. The technologies that are available for the treatment of wastes that are both radiologically and chemically hazardous are generally limited. In DOE's experience, the radiological properties of the waste may also greatly complicate the ability to treat the chemical hazard associated with the waste. DOE recommends that, prior to the promulgation of any treatment standards for characteristic RMW, the EPA become more knowledgeable of the types and quantities of these wastes and that an understanding of the complexities of treating such multi-hazard waste be obtained. DOE will support the EPA in this undertaking.

In addition, DOE suggests that EPA consider development of treatability groups for characteristic RMW separate from that of nonradioactive charcteristic wastes. For example, for the four ignitable treatability groups (subcategories), four more groups or subcategories should be established for mixed wastes. The Agency has indicated the validity of this approach by proposing separate treatment standards for a radioactive lead solids subcategory, and two radioactive mercury waste subcategories. Although these wastes are in the metals category, the rationale appears valid for other characteristic RMW and additional metal waste categories also. In this manner treatment standards will remain clearly separate for radioactive and nonradioactive hazardous wastes.

COMMENT NUMBER: 15-D-2(continued)

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

As discussed in another comment further on, radioactive and radioactive mixed waste managed in tanks that are destined for cementitious stabilization (grout) or vitrification, are adjusted to in excess of pH 12.5 to prevent corrosion of the tanks. Neutralization of these wastes to pH 6 - 9 would be an unnecessary requirement for wastes that will be stabilized in a cementitious medium or that will be made into a glass matrix. It would also most definitely interfere in the chemical fixation of the radiological and the heavy metal constituents in the case of cementitious stabilization (i.e., it would result in an inferior stabilized product). It would also significantly delay setting times and would result in a significant exothermic reaction.

Such heat generated would literally require construction of facilities, not otherwise required, to dissipate the heat and contain and control radioactive gaseous emissions. The addition of a neutralizing agent would also significantly increase waste disposal volumes without certainty that safe disposal would be enhanced, if not diminished.

Comment Number: 15-D-2
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Other Radioactive Wastes
Response:

The Agency disagrees that separate treatability groups need to be set up for radioactive mixed waste within each of the treatability groups established for nonradioactive characteristic wastes. The DOE has provided information and data fin the past (outside the context of the land disposal restrictions program) showing that much of their mixed waste is routinely treated by technologies the Agency has set as BDAT, or has suggested for purposes of meeting the Deactivation treatment standard. When specific data have been submitted showing specific problems with meeting the treatment standard, they have been considered and, in many cases, incorporated into the final rule.

The Agency agrees, however, that there is a need for greater knowledge of the effects radioactivity have on the physical and chemical characteristics of a hazardous waste, as well as on the complexities of treating such waste. Unfortunately, the Agency has neither the time nor the resources to devote to gathering such information in the time frame of promulgation of the Third Third rule.

The pH adjustment that the commenter describes as occurring in tanks prior to stabilization or vitrification is considered a pretreatment step and is not precluded by any treatment standard (so long as it occurs in tanks or containers). For any D002 waste destined for land disposal, however, the Agency reconsidered its requirement of neutralization to pH

Comment Number: 15-D-2 (continued)
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Other Radioactive Wastes
Response:

6-9 for reasons discussed in the preamble of the final rule. The treatment standard of Deactivation as a Method of Treatment that has been promulgated for D002 wastes may be accomplished through the use of several different technologies. See 40 CFR 268, Appendix VI for suggested technologies that are recommended for meeting the Deactivation treatment standard for D002 wastes.

COMMENT NUMBER: 15-D-3

DOCKET NUMBER: LD12-00204

COMMENTER: Util. SW Act. Group / Util. Nuclear Waste & Transp., EEI

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

Another area of complication involving the treatment of mixed waste involves the prescribed treatment methods for ignitable characteristic wastes (D001). Specifically, for ignitable liquids, EPA is proposing a required method of treatment involving incineration, fuel substitution or recovery. See 54 Fed. Reg. at 48479. These options, however, are totally inappropriate for ignitable liquids containing radioactive wastes. First, as explained above, there is no commercial facility available to incinerate mixed waste; consequently, the first treatment option is not viable for "ignitable" mixed waste. Fuel substitution is equally unavailable. As a practical matter, the radioactivity in the ignitable waste renders the material unsuitable for fuel recovery. Finally, recovery as a treatment method is also impracticable because, once again, the radioactive nature of the material eliminates any legitimate reuse options.

The common utility practice for managing this type of waste is to render it non-hazardous and then dispose of the waste as low-level radioactive wastes in a qualified NRC facility. EPA's proposed treatment methods, however, would eliminate this effective and efficient treatment option. The problems associated with radioactive ignitable liquids demonstrates once again the inappropriateness of simply transferring the land ban treatment standards for purely hazardous wastes to mixed wastes.

Comment Number: 15-D-3
Docket Number: LD12-00204
Commenter: Util SW Act. Group/Util Nuclear Waste & Transp., EEI
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Other Radioactive Wastes
Response:

The Agency has established treatment standards for D001 treatability groups containing less than 10 percent total organic carbon (TOC) as a required method of treatment: Deactivation. The Agency developed Appendix VI of 40 CFR 268 to be used in conjunction with the Deactivation treatment standard by presenting suggested technologies suitable for meeting the treatment standard for each treatability group. All the suggested technologies for the low TOC treatability groups render such wastes non-ignitable. Following use of a Deactivation technology (or technologies), the D001 mixed waste could be disposed of as low-level radioactive waste in a qualified NRC facility.

The Agency also established a treatability group for D001 Ignitable Liquids containing greater than 10 percent TOC, and has determined that these wastes must be incinerated. This treatment standard is appropriate for these wastes because they have a high BTU value. D001 radioactive mixed wastes containing greater than 10 percent TOC likewise must be incinerated.

The Agency acknowledges that there are permitting problems associated with commercial incineration of radioactive mixed waste. To account for such problems, provisions for a case-by-case extension of the effective date are found at 40 CFR 268.5. Such an extension can be granted for up to one year and renewed for up to one additional year. A case-by-case extension can be granted subsequent to a national capacity extension, thereby providing a maximum of four years in which to provide treatment capacity for the waste.

COMMENT NUMBER: 15-D-4
DOCKET NUMBER: LD12-00198
COMMENTER: Department of Energy
ISSUE: Mixed Radioactive Hazardous Wastes
SUBISSUE: Other Radioactive Wastes
COMMENT:

20) 54 FR 48492, Separate Treatability Group for High Level Radioactive Mixed Waste (HL-RMW).

Treatment technologies applicable to hazardous wastes may not allow for the safe treatment and handling of both the radiological and chemical hazards associated with RMW. One such DOE waste that presents unique difficulties in treatability is high level radioactive mixed waste (HL-RMW) that is generated from the chemical processing of nuclear reactor fuels and targets.

Due to the highly radioactive component of HL-RMW, and the need to prevent or minimize potential radiation exposure to workers, the public and the environment, DOE has pursued the development of vitrification as a treatment method. DOE believes that its work to date indicates that this method achieves a final waste form that offers long-term stability and protection. In this process, vitrified HL-RMW will be placed in stainless steel canisters in order to insure that the wastes are safely stored and, eventually, transported for disposal in a future high level waste geologic repository.

On December 22, 1989, a data package on the vitrification process was resubmitted, along with supplemental information, for EPA's consideration. This data package contained treatment performance data on results from simulated and actual (i.e, nonradioactive) waste samples. These data include both EP Toxicity and Toxicity Characteristic Leaching Procedure (TCLP) results, and indicate that the vitrification process can achieve treatment levels below the level at which the waste exhibits the characteristic of EP Toxicity. Information pertaining to a leach test that could be utilized on highly radioactive samples was also submitted in the December 22 package. This test is the Product Consistency Test (PCT) and is designed specifically for the glass product resulting from the vitrification process. Results to date indicate that the test is reproducible, yields reliable results rapidly and can be performed remotely in shielded cell facilities with radioactive samples. DOE requests that EPA examine the submitted data and consider the use of the PCT to analyze the treatment performance of the vitrification process in lieu of the TCLP test.

Comment Number: 15-D-4
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Other Radioactive Wastes
Response:

The data provided to the Agency by the DOE has been used to establish a separate treatability group for high-level radioactive mixed wastes containing the following characteristic wastes: Corrosive wastes, arsenic, barium, cadmium, chromium, lead, mercury selenium, and silver. The treatment standard for this treatability group is vitrification. A definition of this required method of treatment can be found in 40 CFR 268.42, Table 1, under the five-letter code HLVIT.

The Agency had neither the time nor resources to evaluate the Product Consistence Test (PCT) within the time constraints of promulgating the Third Third final rule. However, since a required method of treatment is specified in the final rule, compliance need not be measured through analysis of treatment residues.

COMMENT NUMBER: 15-D-5

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

In this December 22, 1989 package, DOE also submitted additional information and data relative to the vitrification process to support the establishment of treatment standards that specifically address HL-RMW. With consideration to the entire December 22 data submittal, DOE requests that EPA evaluate the establishment of a separate waste treatability group or waste code specific to HL-RMW. Furthermore, DOE requests that EPA develop treatment standards for the process wastes associated with the treatment of HL-RMW (separation of the low-level and high-level radioactive fractions is part of the HL-RMW treatment process). For the high level radioactive fraction of the process wastes, DOE requests that EPA establish vitrification as the treatment standard. As previously indicated in the December 22, 1989 package, the remaining process wastes generally include low-level radioactive supernate solution/salts, low-level radioactive organic waste (e.g., benzene - a by-product of the precipitate hydrolysis process), and low-level radioactive mercury that will be recycled. DOE requests that EPA establish the following specified technologies as the treatment standards for these low-level radioactive process waste fractions: incineration of the low-level radioactive organic waste fraction; solidification of the low-level radioactive supernate solution/salts, and recycling of the low-level radioactive mercury.

Comment Number: 15-D-5
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Other Radioactive Wastes
Response:

The Agency disagrees with the commenter's assertion that separate treatability groups need to be established for the various waste streams in the low-level fraction of their waste. Treatability groups are established in cases when there are sufficient differences in the waste characteristics to warrant a different treatment standard. The data that was submitted to support the commenter's assertion shows that the treatment standards applicable to the low-level wastestreams can be met, thus there is no need for separate treatability groups.

COMMENT NUMBER: 15 - D - 6

DOCKET NUMBER: LD10 - 00028

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

DOE generates radioactive mixed alkali wastes. These wastes are typically deactivated by the use of thermal treatment, such as burning in enclosed vessels, followed by wash-down with water to complete the reaction of any unused metal. Some of the radioactive alkali metal is contained in contaminated components and equipment. These waste types are commonly treated with alcohol to convert sodium to sodium hydroxide. It is imperative that EPA not preclude the use of these established and effective treatments for radioactive alkali metals. Therefore, DOE requests that specified technologies not be considered for proposed treatment standards for the Ignitable Reactives Subcategory. DOE supports establishment of the standard "No Land Disposal Based on Deactivation" for Ignitable Reactives.

Comment Number: 15-D-6
Docket Number: LD10-00028
Commenter: Department of Energy
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Other Radioactive Wastes
Response:

The Agency has established treatment standards for D001 treatability groups containing less than 10 percent total organic carbon (TOC) as a required method of treatment: Deactivation. The Agency developed Appendix VI of 40 CFR 268 to be used in conjunction with the Deactivation treatment standard by presenting suggested technologies suitable for meeting the treatment standard for each treatability group. The treater is not, however, precluded from using treatment methods other than those suggested in Appendix VI to rendering such waste non-ignitable. Only for the treatability group for D001 Ignitable Liquids containing greater than 10 percent TOC has the Agency specified required methods of treatment. Radioactive mixed wastes falling into this subcategory must be incinerated.

COMMENT NUMBER: 15 - D-7

DOCKET NUMBER: LD10 - 00028

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

In addition, DOE strongly suggests that EPA consider the development of treatability groups for mixed characteristic waste separate from that of non-radioactive characteristic wastes. For example, for the four ignitable treatability groups, four more groups should be established for mixed wastes. In this manner, treatment standards will remain clearly separate for radioactive and non-radioactive wastes. If EPA does not have the resources to develop separate treatment standards for characteristic mixed wastes by May 8, 1990 (assuming that this date is applied by EPA), it is suggested that a two year national capacity variance for characteristic mixed waste be considered from the 1990 effective date, in order to allow mixed waste generators time to develop or refine technologies and for EPA to consider appropriate BDAT for mixed characteristic wastes based on these technologies.

Comment Number: 15-D-7

Docket Number: LD10-00028

Commenter: Department of Energy

Issue: Mixed Radioactive Hazardous Wastes

Subissue: Other Radioactive Wastes

Response:

The Agency disagrees that separate treatability groups need to be set up for radioactive mixed waste within each of the treatability groups established for nonradioactive characteristic wastes. The DOE has provided information and data in the past showing that much of their mixed waste is routinely treated by technologies the Agency has set as BDAT, or has suggested for purposes of meeting the Deactivation treatment standard. When specific data have been submitted showing specific problems with meeting the treatment standard, they have been considered and, in many cases, incorporated into the final rule.

COMMENT NUMBER: 15 - D - 8

DOCKET NUMBER: LD10 - 00028

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

5) 54 FR 1093, EPA's Approach for Developing BDAT Treatment Standards for Characteristic Wastes

As with all wastes subject to the land disposal restrictions, it is imperative that EPA consider the feasibility and availability of treatment technology for characteristic mixed wastes. Characteristic mixed wastes represent a large category of waste within the DOE complex. The range of treatment technologies that is appropriate to wastes that are both radiologically and chemically hazardous is generally limited. In DOE's experience, the radiological characteristics of the waste may greatly complicate the ability to treat the chemical hazard associated with the waste. DOE strongly recommends that, prior to the promulgation of any treatment standards for characteristic mixed waste, the EPA become intimately familiar with the types and quantities of these wastes and that an understanding of the complexities of treating such multi-hazard waste be obtained. DOE will support the EPA in this undertaking.

Comment Number: 15-D-8

Docket Number: LD10-00028

Commenter: Department of Energy

Issue: Mixed Radioactive Hazardous Wastes

Subissue: Other Radioactive Wastes

Response:

The DOE has provided information and data in the past (outside the context of the land disposal restrictions program) showing that much of their mixed waste is routinely treated by technologies the Agency has set as BDAT, or has suggested for purposes of meeting the Deactivation treatment standard. When specific data have been submitted showing specific problems with meeting the treatment standard, they have been considered and, in many cases, incorporated into the final rule.

The Agency agrees, however, that there is a need for greater knowledge of the effects radioactivity have on the physical and chemical characteristics of a hazardous waste, as well as on the complexities of treating such waste. Unfortunately, the Agency has neither the time nor the resources to devote to gathering such information in the time frame of promulgation of the Third Third rule.

COMMENT NUMBER: 15 - D - 9

DOCKET NUMBER: LD10 - 00034

COMMENTER: Chemical Manufacturers Association

ISSUE: Mixed Radioactive and Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

K. The Agency Has Failed To Discuss Its Strategy Or Plans For Regulating Mixed Radioactive/Hazardous Wastes

In the final rulemaking on First Third wastes on August 17, 1988, the Agency acted to defer to Third Third rulemaking those First Third wastes that are mixed hazardous/radioactive wastes. The Agency stated that "these wastes will not be prohibited from land disposal until May 8, 1990" (53 FR 31147), and appropriate language was entered into 40 CFR 268.12. In this proposal, EPA indicates its plan to extend this deferral to Second Third radioactive mixtures also. CMA supports this action.

CMA is concerned, however, that the Agency has failed in this proposal to discuss its plans for addressing this BDAT determination in the Third Third rulemaking. CMA agrees that such wastes will typically be relatively modest in volume, but is advised that continued Agency attention to this issue will be of critical importance to several CMA member companies. The Agency is urged to pursue this need with appropriate rulemaking activity.

Comment Number: 15-D-9

Docket Number: LD10-00034

Commenter: Chemical Manufacturers Association

Issue: Mixed Radioactive Hazardous Wastes

Subissue: Other Radioactive Wastes

Response:

Treatment standards for several mixed radioactive waste treatability groups were both proposed and promulgated in Third third rulemakings, as the commenter suggests. Most of the treatment standards for nonradioactive wastes that were promulgated in the Third Third final rule apply to the hazardous portion of mixed wastes. Exceptions have been noted in 40 CFR 268.40, 268.41, and 268.42; all treatment standards in 268.43 apply to radioactive mixed waste.

COMMENT NUMBER: 15 - D - 10

DOCKET NUMBER: LD10 - 00019

COMMENTER: Monsanto

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

D. EPA Must Not Fail to Rule on Radioactive Mixed Wastes in the Third Third

In the First Third rule, and in this proposal relative to Second Third wastes, EPA has acted to defer to the Third Third those hazardous wastes which are also radioactive. Monsanto supports this action.

In this proposed rule, the Agency discusses its strategy for approaching BDAT identification for the remaining wastes by May 8, 1990. The discussion covers both listed wastes and characteristic wastes, but fails to present a rationale on radioactive mixed wastes. We feel compelled to remind the Agency of this Third Third requirement, as it will be an action important to Monsanto and other industrial generators.

Comment Number: 15-D-10
Docket Number: LD10-00019
Commenter: Monsanto
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Other Radioactive Wastes
Response:

The hazardous portion of any mixed waste is subject to RCRA, and is therefore subject to the land disposal restrictions. This means that the hazardous portion of all mixed waste must meet the appropriate treatment standard prior to land disposal. The Agency has found that generally the Radioactive portion does not generally interfere with treatment of the hazardous portion. The treatment standards for mixed wastes contaminated with solvents and dioxins has been in effect since November 7, 1988, and the treatment standards for mixed wastes containing California list wastes have been in effect since July 7, 1989. The majority of the treatment standards promulgated in the Third Third final rule apply to the hazardous portion of such waste.

Exceptions have been noted in 40 CFR 268.40, 268.41, and 268.42; all treatment standards in 268.43 apply to radioactive mixed waste. The exceptions are due to the fact that the Agency received comments that provided data showing the need to develop certain treatability groups for specific characteristic mixed wastes: high-level radioactive wastes, radioactive lead solids, radioactive contaminated elemental mercury, and mercury-containing hydralic oil contaminated with radioactive materials.

COMMENT NUMBER: 15-D-11

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

8) 54 FR 48429, Development of Treatment Standards for EP Toxic Characteristic Metal Wastes.

EPA is proposing treatment standards for the characteristic metals expressed as concentration-based standards or as required methods of treatment. DOE supports the establishment of treatment standards as specified methods of treatment for EP Toxic metal waste subcategories, where such an approach is clearly applicable. However, with respect to concentration-based treatment standards, DOE urges that such treatment standards relative to EP Toxic metal RMW be set at the characteristic level concentrations and that stabilization by solidification be considered an acceptable method of treatment to achieve these levels.

Along with the comments provided herein, DOE is resubmitting a data package to EPA describing a stabilization process to treat certain hazardous and mixed waste streams which contain the metals chromium (D007), lead (D008), cadmium (D006), and silver (D011). This data package, previously submitted on September 26, 1989, describes a solidification method of treatment that results in a stable waste form that will achieve levels below EP Toxic metal concentrations (i.e., performance data indicates that this stabilization process brings the RMW below characteristic levels for the EP Toxic metals identified above).

The data package discussed under this comment is separate from, and should not be confused with, the data package on the low-level RMW fraction generated from the pretreatment of high-level RMW streams. In that pretreatment process the low-level RMW fraction is separated from the high-level RMW fraction and then is sent to a grout solidification facility. This grout solidification data package was previously included as part of the December 22, 1989, submission.

With consideration to the stabilization data package being resubmitted with these comments, DOE requests that EPA evaluate the establishment of separate RMW subcategories specific to each metal (i.e. radioactive chromium subcategory), and establish the hazardous characteristic level as the concentration-based treatment standard, or specified methods of treatment (where applicable), for RMW.

Comment Number: 15-D-11

Docket Number: LD12-00198

Commenter: Department of Energy

Issue: Cadmium

Subissue: Set Standards at EP Level

Response:

For reasons discussed in preamble Section III.C. and elsewhere in responses to specific characteristic waste comments and to policy-related comments, the Agency is establishing treatment standards for chromium, lead, cadmium, and silver at the characteristic level for each. The stabilization process that is described by the commenter may be used to treat radioactive mixed wastes containing these characteristic metals so long as it achieves a level below the characteristic level (as measured in a leachate).

COMMENT NUMBER: 15-D-12

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

2) 54 FR 48420, Proposed Treatment Standards for Ignitable Characteristic Wastes.

EPA has divided the D001 Ignitable Characteristic wastes into four subcategories based on the four criteria for identifying a waste as ignitable. These four subcategories and their proposed BDAT treatment standards are: (1) Ignitable Liquids - the proposed treatment standard is incineration; fuel substitution; or recovery as methods of treatment, (2) Ignitable Compressed Gases - where the proposed treatment standard is incineration of vented ignitable gases; or recovery as methods of treatment, (3) Ignitable Reactives - the proposed treatment standard is deactivation as a method of treatment, (4) Oxidizers - with a proposed treatment standard of deactivation as a method of treatment.

DOE supports thermal destruction for the vast majority of ignitable liquid wastes. However, many ignitable wastes are relatively innocuous with respect to biological toxicity (e.g., acetone). This consideration, in conjunction with complications that may occur due to radiological concerns in RMW matrices, make options such as stabilization very feasible and protective of human health and the environment. Stabilization can render ignitable wastes non-liquid as well as non-ignitable, in addition to immobilizing the radioactive components. DOE, therefore, supports the setting of treatment standards based on rendering the waste non-ignitable (flash point greater than 140 degrees F), but not excluding stabilization.

Comment Number: 15-D-12
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Other Radioactive Wastes
Response:

The Agency has established treatment standards for D001 treatability groups containing less than 10% total organic carbon (TOC) as a required method of treatment: Deactivation. The Agency developed Appendix VI of 40 CFR 268 to be used in conjunction with the Deactivation treatment standard by presenting suggested technologies suitable for meeting the treatment standard for each treatability group. Among the suggested technologies for the low TOC treatability groups is stabilization, therefore, the Agency agrees that it is appropriate treatment for many D001 wastes by rendering such wastes non-ignitable.

The Agency also established a treatability group for D001 Ignitable Liquids containing greater than 10% TOC, and has determined that these wastes must be incinerated. This treatment standard is appropriate for these wastes because they have a high BTU value and often contain high levels of toxics. D001 radioactive mixed wastes containing greater than 10% TOC likewise must be incinerated. The treater would not be precluded from stabilizing the ash residue.

COMMENT NUMBER: 15-D-13

DOCKET NUMBER: LD12-00198

COMMENTER: Department of Energy

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

5 **54 FR 48422, Proposed Treatment Standards for Corrosive Characteristic Wastes.**

As indicated earlier, DOE generates substantial characteristic wastes, some of which is corrosive wastes that may or may not be radioactive. Proposed treatment standards for nonradioactive corrosive wastes may not be appropriate for radioactive corrosive wastes. DOE supports the inclusion of stabilization by solidification as an acceptable method of treatment for radioactive corrosive waste. Stabilization solidifies the waste, thus rendering it non-corrosive, physically entraps and chemically stabilizes the EP toxic metals that may be present, and immobilizes the radioactive components.

Comment Number: 15-D-13

Docket Number: LD12-00198

Commenter: Department of Energy

Issue: Mixed Radioactive Hazardous Wastes

Subissue: Other Radioactive Wastes

Response:

The treatment standard of Deactivation as a Method of Treatment that has been promulgated for D002 wastes may be accomplished through the use of stabilization. See 40 CFR 268, Appendix VI for suggested technologies that are recommended for meeting the Deactivation treatment standard for D002 wastes.

COMMENT NUMBER: 15-D-14

DOCKET NUMBER: LD10-00025

COMMENTER: Util. SW Act. Group, EEI, Am. Public Power Assoc., Nat'l Rural Electric Cooperative Assoc.

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

B. At a Minimum, a Capacity Variance for Mixed Waste is Required

Because mixed wastes are considered to contain both RCRA hazardous wastes and radioactive wastes, any facility that treats or disposes of mixed wastes must have a permit from both EPA and NRC. Yet, there are currently no commercial facilities in the country permitted/licensed to treat or dispose of mixed waste. Moreover, before such a facility can become available, EPA and NRC must develop regulations to govern the conditions that must be met by facilities permitted to handle these unique wastes. It will likely take a number of years for any such facility to become operational. Therefore, even if the land ban program is made applicable to mixed wastes, a two year national capacity variance from the land ban program is necessary for mixed wastes pursuant to RCRA § 3004(h) (42 U.S.C. § 6924(h)).8/

Specifically, a two year national capacity variance is needed to avoid putting every commercial nuclear power plant and other generators of mixed waste into unavoidable violation of RCRA. As explained above, the storage of "land ban" waste

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8/ Section 3004(h)(2) authorizes EPA to delay the effective date of an applicable land ban prohibition for up to two years "on the basis of the earliest date on which adequate alternative treatment, recovery, or disposal capacity [for the restricted waste] which protects human health and the environment will be available." 42 U.S.C. § 6924(h)(2).

COMMENT NUMBER: 15-D-14 (continued)

DOCKET NUMBER: LD10-00025

COMMENTER: Util. SW Act. Group, EEI, Am. Public Power Assoc., Nat'l Rural Electric Cooperative Assoc.

ISSUE: Mixed Radioactive Hazardous Wastes

SUBISSUE: Other Radioactive Wastes

COMMENT:

is prohibited unless such storage is necessary to "facilitate proper recovery, treatment, or disposal . . . ." 40 C.F.R. § 268.50.[9] Because there are no commercial mixed waste "recovery, treatment or disposal" facilities currently available, nor are there likely to be any time in the near future, mixed waste generators will be forced to store mixed waste on-site indefinitely in violation of the RCRA storage ban. This is precisely the type of dilemma which Congress intended EPA to provide relief for through the granting of a national capacity variance. Accordingly, to avoid untenable regulatory consequences, a two year national capacity variance from the land ban program must be provided for mixed wastes.

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[9] See also RCRA § 3004(j), 42 U.S.C. § 6924(j).

COMMENT NUMBER: 15 - D - 14 (continued)
DOCKET NUMBER: LD10 - 00025
COMMENTER: Util. S.W. Act. Group, EEI, Am. Public Power Assoc., Natl. Rural Electric Cooperative Assoc.
ISSUE: Mixed Radioactive Hazardous Wastes
SUBISSUE: Other Radioactive Wastes
COMMENT:

Third, there are no facilities permitted by EPA and NRC to dispose of mixed wastes. Thus, even if these wastes could be treated to the appropriate levels, they could not be land disposed. This result would directly contradict NRC requirements which contemplate the land disposal of most radioactive wastes.

In view of these inconsistencies between the applicable NRC and RCRA requirements, it seems plain that application of the RCRA land ban program to mixed waste is barred by RCRA § 1006(a). At a minimum, because there are currently no commercial treatment or disposal facilities licensed to manage mixed waste, nor will any such facilities be available in the near future, EPA should issue a two year national capacity variance for mixed waste to allow time for mixed waste treatment/disposal facilities to come on-line. These issues are discussed in more detail below.

Comment Number: 15-D-14
Docket Number: LD10-00025
Commenter: The Utility Solid Waste Activities Group; the Edison Electric Institute; the American Public Power Association, and the National Rural Electric Cooperative Assn on Proposed Land Disposal Restrictions for Second-Third Wastes
Issue: Mixed Radioactive Hazardous Wastes
Subissue: Other Radioactive Wastes
Response:

The hazardous portion of any mixed waste is subject to RCRA, and is therefore subject to the land disposal restrictions. This means that the hazardous portion of all mixed waste must meet the appropriate treatment standard prior to land disposal. The majority of the treatment standards promulgated in the Third Third final rule apply to the hazardous portion of such waste. The treatment standards for mixed wastes contaminated with solvents and dioxins has been in effect since November 7, 1988, and the treatment standards for mixed wastes containing California list wastes have been in effect since July 7, 1989. Exceptions have been noted in 40 CFR 268.40, 268.41, and 268.42; all treatment standards in 268.43 apply to radioactive mixed waste.

The Agency acknowledges that there are permitting problems associated with commercial incineration of radioactive mixed waste. To account for such problems, the Agency has granted a two-year national capacity variance to mixed Third Third wastes (all First and Second Third mixed wastes were rescheduled to the Third Third). Additionally, there are provisions for a case-by-case extension of the effective date found at 40 CFR 268.5. Such an extension can be granted for up to one year and renewed for up to one additional year. A case-by-case extension can be granted subsequent to a national capacity extension, thereby providing a maximum of four years in which to provide treatment capacity for the waste.

ISSUE CODE 16: Polynuclear Aromatic U Wastes

A. Treatment Standards
B. Recycling/Reuse

Comment Number: 16-A-1

Docket Number: LD10-00034

Commenter: CMA

Issue: Nonhalogenated POLYNUCLEAR AROMATIC U-WASTES AND OTHER HYDROCARBONS U-WASTES

Subissue: TREATMENT STANDARD

Comment:

As EPA has recognized in the preamble to the proposed rule, many of the polycyclic hydrocarbons listed in Table 7 are known products of incomplete combustion. These substances are not only created during the combustion of wastes, but are typically formed in small amounts during the combustion of fuel oils, gasoline, and wood, as examples. Because of the ubiquitous nature of polycyclic hydrocarbons, BDAT concentration standards for these chemicals must account for the potential that they will be formed/present due to sources other than the hazardous wastes.

COMMENT NUMBER: 16-A-1
DOCKET NUMBER: LD10-00034
COMMENTER: Chemical Manufacturers Association (CMA)
ISSUE: 16-Nonhalogenated Polynuclear Aromatic U-Wastes
SUBISSUE: Treatment standards
RESPONSE:

The Agency is aware of the potential that some of the polycyclic hydrocarbons may be present from other sources due to their ubiguitous nature. Therefore, the Agency reviewed all the performance data available to the Agency and has typically selected the highest detection limits for the constituents of concern in the nonhalogenated polynuclear aromatic treatability group. By selecting the highest detection limits the Agency has ensured that the worst case scenario will be addressed. Also, EPA believes that the highest detection limits are more routinely achievable in treatment residuals.

Comment Number: 16-B-1
Docket Number: LD12-00149
Commenter: Cement Kiln Recycling Coalition
Issue: Non halogenated Poly nuclear Aromatic U-Wastes AND OTHER HYDROCARBONS U-WASTES
Subissue: Recycling / Reuse
Comment:

B. Incineration as a Method of Treatment for Non-Wastewaters

Our comments in this subsection apply to the following technology-based standards proposed for non-wastewaters:

1. Incineration as a method of treatment for non-wastewater forms of: K025, P002, P007, P008, P014, P016, P017, P018, P022, P023, P026, P027, P028, P034, P042, P045, P046, P047, P049, P054, P057, P058, P064, P066, P067, P069, P070, P072, P075, P084, P093, P095, P108, P116, P118, U006, U007, U010, U011, U014, U015, U016[2], U017, U020, U021, U026, U033, U034, U035, U041, U042, U046, U049, U055[3], U056[3], U059, U062, U064[2], U089, U090, U091, U092, U094[2], U095, U097, U110, U114, U116, U119, U143, U148, U149, U150, U153, U156, U163, U164, U171, U173, U176, U177, U178, U186, U191, U193, U194, U200, U202, U206, U218, U219, U222, U234, U236, U237, U238, U240 and U244.

3 - NONHALOGENATED AROMATICS
2 - POLYNUCLEAR AROMATICS

Comment Number: 16-B-1 (con't)
Docket Number: LD12-00149.
Commenter: Cement Kiln Recycling Coalition
Issue: Nonhalogenated Polynuclear Aromatic U-wastes
Subissue: Recycling/Reuse
Comment:

The principal chemical oxides required for the production of cement are calcia (typically provided by limestone), silica and alumina (usually provided by appropriate mixtures of clay, shale, slate and sand) and iron (usually supplemented by iron ore or steel mill scale when an insufficient amount is present in natural raw materials). The technology standards specified in items 1, 2 and 3 above also apply to the soil and debris contaminated by these wastes. Certain soils and debris can be substituted for the raw ingredients in the cement manufacturing process. The soils and debris contaminated by the above hazardous wastes can be used as effective substitutes for raw materials in cement manufacture with destruction of the hazardous constituents from the contaminants. Again, not specifying recycling as a treatment technology will prevent beneficial reuse of soil and debris contaminated with these wastes.

The Cement Kiln Recycling Coalition recommends that recycling in cement kilns be specified as one of the treatment methods for these wastes. This recommendation is based on the same seven reasons specifically mentioned in item A above.

Comment Number: 16-B-1 (con't)
Docket Number: LD12-00149
Commenter: Cement Kiln Recycling Coalition
Issue: Nonhalogenated Polynuclear Aromatic Wastewaters
Subissue: Recycling / Reuse
Comment:

The Cement Kiln Recycling Coalition recommends that recycling/reuse be added as the treatment standard to the other specified technologies for wastewaters specified in items 1, 2 and 3 above for the following reasons:

1. It will provide a technology for these wastes which is superior to other technologies specified.
2. It will not result in any residues generated in the treatment process.
3. It is a safer technology than some of the multiple treatments specified for the protection of the environment and public health by preventing multiple handling of wastes.
4. It provides more favorable conditions for the destruction of hazardous constituents than the incineration method through higher temperatures and residence times.
5. The product (i.e., cement) is not a saleable product if it does not meet ASTM standards. Hence, the introduction of hazardous wastewaters in cement kilns will be very carefully monitored and controlled.
6. Any hydrocarbon emissions will be specifically controlled by the upcoming Boiler and Industrial Furnace regulations (PIC standard).
7. This recycling technology will enhance EPA's objective of waste minimization and recycling.

COMMENT NUMBER: 16-B-1
DOCKET NUMBER: LD12-00149
COMMENTER: Cement Kiln Recycling Coalition
ISSUE: 16-Nonhalogenated Polynuclear Aromatic U-Waste
SUBISSUE: Recycling/Reuse
RESPONSE:

The Agency determined that there are analytical complications associated with U016 (benz(c)acridine), U064 (1,2,7,8-dibenzopyrene) and U094 (7,12-dimethylbenz(a)anthracene) in terms of how reliably the primary hazardous constituents can be quantified (specific reasons for the analytical complication are detailed in the Final BDAT Background Document for Organic U and P Waste and Multi-source leachate Volume B). Accordingly, the Agency is promulgating incineration as a method of treatment for the above-mentioned wastes.

The Agency selected incineration as a method of treatment for these wastes because EPA has treatment performance data to show that incineration will treat these waste (in most cases) to non detectable levels in the incinerator ash. Until the boilers/furnaces rules are completed, the Agency is ordinarily not designating fuel substitution as a treatment method except for wastes that are exceptionally good fuels. Until boilers/furnaces rules are complete, Section 268.42 is a possible avenue for the cement kilns to pursue.

ISSUE CODE 17: Halogenated Aliphatic U Wastes

A. Treatment Standards
B. BDAT

Comment Number: 17-A-1
Docket Number: LD10-00036
Commenter: Vulcan Chemicals
Issue: Halogenated Aliphatic U-wastes
Subissue: TREATMENT STANDARD
Comment:

Comments on EPA's approach to remaining wastes

EPA describes approaches and options for establishing BDAT treatment standards for the remaining "U" and "P" wastes that have not been proposed to date. The "U" wastes of considerable interest to Vulcan are the chlorinated aliphatics: U044 (chloroform), U076 (1,1-dichloroethane), U077 (1,2-dichloroethane), U080 (methylene chloride), U210 (tetrachloroethylene), U211 (carbon tetrachloride), U226 (1,1,1-trichloroethane), and U228 (trichloroethylene), among others.

For these chlorinated aliphatics, EPA anticipates transferring performance data from the rotary kiln incineration of K019 - wastes from the production of ethylene dichloride or from the incineration of F024. Although this would seem to be a reasonable approach, many of these chlorinated aliphatics are solvents which comprise wastes F001 and F002 when spent. It would therefore seem more appropriate to establish the same treatment standards for these solvents as has been previously established for these solvents when spent. It is recognized that the F001 and F002 treatment standards were based on TCLP extraction analyses but it would seem quite feasible to establish the equivalent total weight analysis, which seems to be the preferred manner of analysis of more currently listed wastes.

COMMENT NUMBER: 17-A-1
DOCKET NUMBER: LD10-00036
COMMENTER: Vulcan Chemicals
ISSUE: 17-Halogenated Aliphatic U-Wastes
SUBISSUE: Treatment Standards
RESPONSE:

The Agency reviewed its entire treatment performance data base including the data from treatment of F001 and F002 spent solvents in developing the treatment standards for the halogenated aliphatic U-wastes. The Agency has determined that for the nonwastewater halogenated aliphatic U-waste constituents, incineration is the best demonstrated available technology because all the constituents of concern were treated below the detection limits in the treated residuals. No other technology could do better.

In the final rule for the halogenated aliphatic U-waste constituents, the treatment standards were derived from an analysis of wastewater treatment data from various sources, i.e., (1) Best Demonstrated Available Technology data base (including F001 and F002 data); (2) Industrial Technology Division data base; (3) National Pollutant Discharge Elimination System data base; (4) wet air oxidation data; (5) Water Engineering Research Laboratory data base; and (6) Organic Chemicals Plastics, and Synthetic Fibers data base.

The Agency believes that the wastewater treatment standards derived from these data are representative of diverse waste matrices containing halogenated aliphatic constituents. Therefore EPA believes that these data are appropriate for determining the wastewater standards.

Comment Number: 17 - A- 2

Docket Number: LD10 - 00051

Commenter: HALOGENATED SOLVENTS INDUSTRY ALLIANCE

Issue: HALOGENATED ALIPHATIC U-WASTES

Subissue: TREATMENT STANDARDS

Comment:

Useful data may now be available on total constituent concentrations in treated residuals for F001-F005 wastes. Based upon the treatment standards developed to date, it is not clear that rotary kiln incineration will always be BDAT for all chlorinated aliphatic U wastes. The establishment of wastewater and nonwastewater treatability groups also may be appropriate. Given the potential for a significant degree of variability among U wastes (e.g., a commercial chemical product containing a U waste constituent as its sole active ingredient is likely to contain that constituent in a much higher concentration than a spill residue), it is reasonable to consider the broadest range of BDAT technologies in determining numerical treatment standards for these wastes. Furthermore, in transferring performance data from treatment of one waste in order to develop treatment standards for another waste, careful consideration of the potential concentrations of BDAT constituents in the untreated waste is necessary since the removal efficiency of certain treatment technologies may be limited.

COMMENT NUMBER: 17-A-2
DOCKET NUMBER: LD10-00051
COMMENTER: Halogenated Solvents Industry Alliance
ISSUE: 17-Halogenated Aliphatic U-Wastes
SUBISSUE: Treatment Standards
RESPONSE:

F001-F002 performance data are from TCLP extract of incinerator ash and is not total concentration data. The Agency believes that total concen- tration data are more appropriate for setting treatment standards because it is most appropriate for measuring destruction or removal of organic constituents.

Based on all of the data available to the Agency, EPA has determined that incineration is BDAT for nonwastewaters. The Agency has not specified any one type of incineration over any other, but has set BDAT as incineration in general, leaving open any of the various incineration technologies, e.g., rotary kiln, fixed hearth, liquid injection, fluidized bed, etc. The Agency wishes to point out that since concentration-based treatment standards are promulgated, any technology that achieves the concentration levels specified may be used to reach the treatment standards.

In selecting the waste code from which the transfer of data was made, the first criteria was to select a waste code (if possible) that contained the constituent of concern in the untreated waste.

In reviewing its entire incineration performance data base, the Agency has acknowledged the great diversity in concentrations of any particular U-waste. Therefore, the Agency typically selected the highest detection limits to target the worst-case scenarios, and because the Agency believes that the highest level is more routinely achievable in treatment residuals. EPA considered all available data from various technologies in determining the concentration-based treatment standards for both nonwastewater and wastewater forms of the halogenated aliphatic U-wastes.

Comment Number: 17 - A - 3
Docket Number: LD12-00031
Commenter: HAZARDOUS WASTE TREATMENT COUNCIL
Issue: HALOGENATED ALIPHATIC U-WASTES
Subissue: TREATMENT STANDARDS
Comment:

Halogenated Organic Treatability Group

For the halogenated U and P wastes, HWTC feels that the treatment standards should be technology transferred from K019 rather than from F024. The F024 waste contains only 5 percent chlorinated organic constituents comprised primarily of just six halogenated organic constituents. K019 waste contain a greater percentage of chlorinated organic and more chlorinated BDAT constituents.

COMMENT NUMBER: 17-A-3
DOCKET NUMBER: LD10-00031
COMMENTER: Hazardous Waste Treatment Council
ISSUE: 17-Halogenated Aliphatic U-Wastes
SUBISSUE: Treatment Standard
RESPONSE:

The promulgated treatment standards are based on transfer of performance data from K019. The Agency acknowledges the commenter's position supporting EPA's decision to use the K019 treatment performance data to develop the treatment standards (nonwastewater) for the halogenated aliphatic U and P wastes.

Comment Number:	17-8-1
Docket Number:	LD12-00128
Commenter:	VULCAN CHEMICALS
Issue:	HALOGENATED ALIPHATIC U-WASTES
Subissue:	BDAT
Comment:	

Vulcan believes that the division of the halogenated organics into six general categories is a reasonable approach and believes that the application of incineration technology to halogenated U and P chemicals is appropriate and cost effective. We are concerned with the emphasis in this section on the use of rotary kilns. Other types on incinerators are as effective and in some instances, more effective than rotary kiln incinerators and the use of liquid and gas phase incinerators should also be considered as T for the halogenated organics.

COMMENT NUMBER: 17-B-1
DOCKET NUMBER: LD12-00128
COMMENTER: Vulcan Chemicals
ISSUE: 17-Halogenated Aliphatic (U-Wastes)
SUBISSUE: BDAT
RESPONSE:

The Agency has not specified any one type of incineration over another, but has set BDAT as incineration in general. The rotary kiln incineration of K019 is what the numerical standards are derived from. Rotary kiln incineration has been determined based on review of all treatment performance data available to the Agency to be the best treatment performance for destruction or removal of the constituents of concern. Therefore, the Agency determined that rotary kiln incineration is BDAT for K019 wastes. Because the EPA is promulgating concentration-based treatment standards, the Agency is leaving open any of the various incineration technologies, e.g., rotary kiln, fixed hearth, liquid injection, fluidized bed, etc. The Agency wishes to point out that since concentration-based treatment standards are promulgated, any technology that achieves the concentration levels specified may be used to reach the treatment standards.

ISSUE CODE 18: Non-halogenated Aromatic U Wastes

A. Treatment Standards
B. Recycling/Reuse

Comment Number: 18-A-1
Docket Number: LD10000.2
Commenter: BP AMERICA
Issue: NONHALOGENATED AROMATIC U-WASTES
Subissue: TREATMENT STANDARDS
Comment:

EPA Can Propose A Concentration Limit For U003, U009 And U019 By Applying The Non-Wastewater Concentration Limit For K011, K013, And K014 To U003 And U009 And The Limit For K048 - K052 To U019.

The Agency is currently evaluating rotary kiln incineration of U003, U009 and U019. If the technology is appropriate EPA would set deactivation by incineration as BDAT rather than establishing concentration based limits. We encourage the agency to set concentration limits rather than promulgate a technology as BDAT for these materials. Wastes that are labeled U003, U009 and U019 can include off spec or intermediate chemicals, soils, lab wastes, leachate mixture with other wastewater and tank bottoms. Although incineration may be appropriate for off spec chemicals, a dilute mixture of U003, U009 and U019 with wastewater may be more effectively treated by chemical deactivation (for the monomers) or by biological treatment. EPA proposes at 54 FR 1070 concentration limits for K011, K013, K014 in which acrylonitrile and acetonitrile limits are defined. Depending upon the waste matrix, concentrations of soils and debris contaminated with U003 and U009 may be significantly below or above typical concentrations of these constituents in K011, K013, and K014. However, if the agency is unable to obtain sufficient data to promulgate concentrations they should transfer the concentration standards from the establishment of BDAT for K011, K013 and K014. Similarly, K048 - K052 wastes contain benzene and technology transfer can be used in the same way to develop concentration based standards for U019.

COMMENT NUMBER: 18-A-1
DOCKET NUMBER: LD10-0012
COMMENTER: BP America
ISSUE: 18-Nonhalogenated Aromatic U-wastes
SUBISSUE: Treatment standards
RESPONSE

For the Third Third Rulemaking, the Agency is promulgating a concentration-based treatment standard for U019 (benzene). EPA determined the nonwastewater treatment standard for U019 by reviewing its entire Best Demonstrated Available Technology (BDAT) incineration performance data base. The Agency has promulgated concentration-based levels and therefore treaters of U019 wastes may use whatever technology necessary to reach the specified treatment level.

The Agency is aware of the great diversity in concentrations that a particular U-waste may have, therefore, EPA typically selected the highest detection limits from the BDAT incineration performance data base to develop the treatment standards. By selecting the highest detection limits the Agency ensured that the worst case scenario would be addressed. Also, EPA believes that the highest levels (detection limits) are more routinely achievable in treatment residuals.

As it turns out, U019 (benzene) was not present in K048/K052 untreated waste (that was incinerated). The Agency, therefore, selected the performance data from K001 (K001 untreated waste contained benzene with the highest detection limit) for determining the concentration-based treatment standards.

Comment Number: 18-B-1
Docket Number: LD10-00042
Commenter: AMERICAN PETROLEUM INSTITUTE
Issue: NONHALOGENATED AROMATIC U-WASTES AND OTHER HYDROCARBONS U-WASTES
Subissue: RECYCLING/REUSE
Comment:

1. Recommendations for U19 (Benzene), U220 (Toluene) and U239 (Xylene)

Many U.S. refiners manufacture benzene, toluene and xylene (BTX) for subsequent sale to chemical companies for use in plastics, olefins and polymers. As a result, many refineries have large inventories of BTX products on site. Experience indicates that virtually all BTX which is in a liquid form may be recycled within the refinery process units, either through addition to crude charge (from which it was originally separated) or some other compatible process.

Thus, API agrees with EPA that the final regulations for U and P wastes should ensure that legitimate recycling and reuse options remain available. These options should remain unencumbered by protracted permitting issues. In fact, EPA has no authority under Subtitle C to restrict legitimate on-site reuse or recycling of such substances in the production process. See American Mining Congress v. EPA, 824 F.2d 1177 (D.C. Cir. 1987).

However, since it is possible that reuse or recycling will not be feasible in certain cases (e.g., for residues in media resulting from spills or clean ups), EPA should not adopt a "no land disposal" standard for these wastes. As a general matter, EPA should always set treatment standards for all wastes in recognition that recycling is not always possible.

COMMENT NUMBER: 18-B-1
DOCKET NUMBER: LD10-00042
COMMENTER: American Petroleum Institute
ISSUE: Nonhalogenated Aromatic U-Wastes and Other Hydrocarbon U-Wastes
SUBISSUE: Recycling/Reuse
RESPONSE:

The Agency acknowledges the commenter's concern that recycling and reuse as an option remain available with respect to U019 (benzene), U220 (toluene) and U239 (xylene). EPA is promulgating concentration-based treatment standards for the above-mentioned wastes. Compliance with these concentration-based treatment standards requires only that the treatment levels be achieved; once achieved, the waste may be land disposed in a Subtitle C unit. The waste need not be treated by the BDAT technology; in fact, a concentration-based treatment standard provides maximum flexibility in one's choice of treatment technology because any treatment, including recycling/reuse or any combination of treatment technologies unless prohibited (e.g., impermissible dilution) or unless defined as land disposal (e.g., land treatment), can be used to achieve the standards.

The commenter stated that EPA should not adopt a standard of "no land disposal" for the above-mentioned wastes if reuse or recycling is not feasible in certain cases, e.g., for media resulting from spills or cleanup. The commenter suggested that as a general matter, EPA should always set treatment standards for all wastes in recognition that recycling is not always possible. Currently, the Agency has moved away from setting no land disposal as a standard. In most cases EPA prefers to establish concentration-based standards, and typically establishes a treatment method as a standard only when the Agency has no means of calculating valid concentration-based standards that can be used for compliance monitoring. In such cases, that particular technology must

COMMENT NUMBER: 18-B-1 (continued)
DOCKET NUMBER: LD10-00042
COMMENTER: American Petroleum Institute
ISSUE: Nonhalogenated Aromatic U-Wastes and Other Hydrocarbon U-Wastes
SUBISSUE: Recycling/Reuse
RESPONSE:

be used to treat that particular waste (including any mixture that contains the waste). Additionally, in cases where EPA has specified the use of a technology (or technologies) a generator or treater can however, demonstrate that an alternative technology can achieve the equivalent level of performance as that of the specified treatment method. For further details see FR notice Vol. 54, No. 224, p. 48382.

Comment Number: 18-B-2

Docket Number: LD12-00149.

Commenter: CEMENT KILN RECYCLING COALITION

Issue: NONHALOGENATED AROMATIC U-WASTES AND OTHER HYDROCARBONS U-WASTES

Subissue: RECYCLING / REUSE

Comment:

B. Incineration as a Method of Treatment for Non-Wastewaters

Our comments in this subsection apply to the following technology-based standards proposed for non-wastewaters:

1. Incineration as a method of treatment for non-wastewater forms of: K025, P002, P007, P008, P014, P016, P017, P018, P022, P023, P026, P027, P028, P034, P042, P045, P046, P047, P049, P054, P057, P058, P064, P066, P067, P069, P070, P072, P075, P084, P093, P095, P108, P116, P118, U006, U007, U010, U011, U014, U015, U016[2], U017, U020, U021, U026, U033, U034, U035, U041, U042, U046, U049, U055[3], U056[3], U059, U062, U064[2], U089, U090, U091, U092, U094[2], U095, U097, U110, U114, U116, U119, U143, U148, U149, U150, U153, U156, U163, U164, U171, U173, U176, U177, U178, U186, U191, U193, U194, U200, U202, U206, U218, U219, U222, U234, U236, U237, U238, U240 and U244.

2 - Polynuclear Aromatics

3 - Nonhalogenated aromatics

Comment Number: 18-B-2 (Cont)
Docket Number: LD12-00149.
Commenter: Cement Kiln Recycling Coalition
Issue: Nonhalogenated aromatic U-WASTES AND HYDROCARBONS U-WASTES
Subissue: RECYCLING/REUSE
Comment:

The principal chemical oxides required for the production of cement are calcia (typically provided by limestone), silica and alumina (usually provided by appropriate mixtures of clay, shale, slate and sand) and iron (usually supplemented by iron ore or steel mill scale when an insufficient amount is present in natural raw materials). The technology standards specified in items 1, 2 and 3 above also apply to the soil and debris contaminated by these wastes. Certain soils and debris can be substituted for the raw ingredients in the cement manufacturing process. The soils and debris contaminated by the above hazardous wastes can be used as effective substitutes for raw materials in cement manufacture with destruction of the hazardous constituents from the contaminants. Again, not specifying recycling as a treatment technology will prevent beneficial reuse of soil and debris contaminated with these wastes.

The Cement Kiln Recycling Coalition recommends that recycling in cement kilns be specified as one of the treatment methods for these wastes. This recommendation is based on the same seven reasons specifically mentioned in item A above.

Comment Number: 18-B-2 (con't)
Docket Number: LD12-00149.
Commenter: Cement Kiln Recycling Coalition
Issue: Nonhalogenated Aromatic U-waste and other hydrocarbons U-wastes
Subissue: Recycling /Reuse
Comment:

The Cement Kiln Recycling Coalition recommends that recycling/reuse be added as the treatment standard to the other specified technologies for wastewaters specified in items 1, 2 and 3 above for the following reasons:

1. It will provide a technology for these wastes which is superior to other technologies specified.
2. It will not result in any residues generated in the treatment process.
3. It is a safer technology than some of the multiple treatments specified for the protection of the environment and public health by preventing multiple handling of wastes.
4. It provides more favorable conditions for the destruction of hazardous constituents than the incineration method through higher temperatures and residence times.
5. The product (i.e., cement) is not a saleable product if it does not meet ASTM standards. Hence, the introduction of hazardous wastewaters in cement kilns will be very carefully monitored and controlled.
6. Any hydrocarbon emissions will be specifically controlled by the upcoming Boiler and Industrial Furnace regulations (PIC standard).
7. This recycling technology will enhance EPA's objectives of waste minimization and recycling.

COMMENT NUMBER: 18-B-2

DOCKET NUMBER: LD12-00149

COMMENTER: Cement Kiln Recycling Coalition

ISSUE: Nonhalogenated Aromatic U-Waste and Other Hydrocarbons U-Wastes

SUBISSUE: Recycling/Reuse

RESPONSE:

The Agency determined that there are analytical complications associated with U055 (cumene) and U056 (cyclohexane) in terms of how reliably the primary hazardous constituents can be quantified (specific reasons for the analytical complications are detailed in the final BDAT Background Document for Organic U and P Waste and Multisource Leachate Volume B). Accordingly, the Agency is promulgating incineration as a method of treatment for the above-mentioned wastes.

The Agency selected incineration as amethod of treatment for these wastes because EPA has treatment performance data to show that incineration will treat these waste (in most cases) to non detectable levels in the incinerator ash. Although the commenter presents a valid argument to include recycling as a method of treatment for these wastes, they provide no data to support their contention. Without treatment data, the Agency usually can not determine whether the commenter's claims are in fact correct and accurate. Therefore, the Agency is only promulgating incineration as a method of treatment for the above-mentioned wastes. However, recycling is always a preferred alternative and the Agency encourages such technologies. If the commenter's recycling technology produces a saleable product and generates no hazardous residuals, recycling is always allowed. In fact such recycling technologies would not even require a RCRA permit (except possibly for storage prior to the recycling technology).

ISSUE CODE 19: F002-F005 - Solvents

A.-. Method of Detection
B.-. Biological Treatment
C.-. Treatment Standard
D.-. 2-nitropropane Standard
E.-. Definition of Wastewater and Solvent Mixtures

Comment Number: 19-A-1

Docket Number: LD12-00110

Commenter: Thermalkem / Cyanokem

Issue: F002 - F005

Subissue: Method of Detection

Comment:

If no EPA approved method exists that has been properly validated, then no concentration based treatment standard can be set for that constituent since it is not analyzable for compliance purposes. In such a case, either a specified treatment methodology standard should be set, a surrogate compound specified as a standard if an EPA method exists, or the other regulated constituents for which treatment standards have been set can serve as indicators of performance. A good example is the method standard in F001-F005 waste. No EPA method exists for methanol and all laboratories are having difficulty in detecting methanol in incinerator ash at the levels of regulatory concern. This was confirmed by the HWTC PQL study. EPA should therefore withdraw and reserve the standard for methanol until a suitable method is developed and properly validated. We understand that EPA's Methods Branch is currently researching this problem recognized by the Agency. Reserving the methanol standard in F001-F005 waste will cause no environmental risk, as there are 24 other BDAT constituents set as treatment standards for this waste that can serve as indicators of incinerator performance, and the effectiveness of treatment. If the other 24 BDAT constituents are destroyed to the required concentration based BDAT levels, then methanol has also surely been destroyed to the maximum extent achievable by BDAT.

Comment Number:	19-A-1
Docket Number:	LD12-00110
Commenter:	THERMALKEM/CYANOKEM
Issue:	19-F002-F005
Subissue:	Method of Detection

Response:

Treatment standards promulgated for F001-F005 were not reopened for comment and review in this Third Thirds rulemaking. These solvents and dioxin standards (51 FR 40572) are final. The proposed November 22, 1989, Third Thirds rulemaking (54 FR 48372) proposed revisions that include treatment standards for newly listed F002/F005 constituents. These constituents are 1,1,2-trichloroethane (F002), benzene (F005), 2-ethoxyethanol (F005), and 2-nitropropane (F005).

However, the commenters' concern can be addressed in a separate rulemaking according to the provisions outlined in 40 CFR 260.20. "Section 260.20 establishes procedures for petitioning EPA to amend, modify, or revoke any provision of Parts 260 through 265 and 268 of this Chapter and establishes procedures governing EPA's action to such petitions."

Comment Number: 19-B-1
Docket Number: LD12-L0007
Commenter: CMA
Issue: F002-F005
Subissue: Biological Treatment
Comment:

Y. EPA's Determination That Biological Treatment Represents BDAT for 1,1,2-Trichloroethane, Benzene, And 2-Ethoxyethanol in F002 and F005 Wastewaters Is Supported by the Agency's Database.

EPA has identified biological treatment as BDAT for 1,1,2-trichloroethane, benzene, and 2-ethoxyethanol in F002 and F005 wastewaters. 54 Fed. Reg. at 48,461. CMA supports this decision, and reiterates that whenever possible, the Agency should develop wastewater treatment standards from the Agency's Industrial Technology Division (ITD) wastewater treatment data.

Comment Number: 19-B-1
Docket Number: LD12-L0007
Commenter: CMA
Issue: 19-F002-F005
Subissue: Biological Treatment
Response:

EPA acknowledges the support for biological treatment as BDAT for 1,1,2-trichloroethane, benzene, and 2-ethoxyethanol in F002 and F005 wastewaters. The Agency is promulgating treatment standards for 1,1,2-trichloroethane and benzene as proposed. The Agency has reexamined the data available for 2-ethoxyethanol and has determined that the data are insufficient to promulgate a concentration-based standard. The Agency will promulgate a method of treatment as the wastewater standard. This method of treatment is biological treatment (e.g., activated sludge) transferred from Hazardous Waste Engineering Research Laboratory data for n-butyl alcohol.

The Agency did review and utilize the Office of Water's Industrial Technology Division (ITD) data in determining wastewater treatment standards for this Rule.

Comment Number: 19-C-1
Docket Number: LD12-00110
Commenter: ThermalKem | Cyanokem
Issue: F002-F005
Subissue: Treatment Standard
Comment:

F001-F005 WASTE

We are concerned that the treatment standards for the new F001-F005 solvent constituents are expressed on a total basis, yet the treatment standards for the other 25 solvent constituents promulgated November 8, 1986 are based on TCLP data. Ultimately, all incineration treatment standards should be set on a total basis, since EPA's policy on BDAT is that organic constituents can be destroyed, and that BDAT for destruction technologies must therefore be set on a total basis (see 53 Federal Register, Vol. 159, pg. 31146). Likewise, the legislative history emphasizes that organic constituents be destroyed (see Vol. 130, Congressional Record S9179, 7/25/84).

We support these new standards on a total basis and urge EPA to revise the other 25 solvent constituents to a total basis. This is mainly as a practical matter, so that one test protocol can be performed to demonstrate compliance for these waste codes. It is also crucial environmentally since by retaining the TCLP standards for the 25 solvents, EPA is encouraging stabilization which has no effect in treatment or destruction of these organic constituents, but merely dilutes them to within the treatment standards.

Comment Number: 19-C-1
Docket Number: LD12-00110
Commenter: THERMALKEM/CYANOKEM
Issue: 19-F002-F005
Subissue: Treatment Standard
Response:

In the proposed BDAT Background Document Amendment for F002 (1,1,2-Trichloroethane) and F005 (Benzene, 2-Ethoxyethanol, and 2-Nitropropane), November 1989, it is stated:

"Note that at the time treatment standards were originally promulgated for F001-F005 (51 FR 40572), useful data were not available on total constituent concentrations in nonwastewater residuals, hence TCLP was, at the time, considered to be the best available measure of performance for solvents in nonwastewaters. Since that time EPA has consistently promulgated total concentration standards for organic constituents in nonwastewater residuals, and proposes to do so for the four solvents being proposed for regulation here." The Agency is promulgating treatment standards based on total concentration for 1,1,2-trichloroethane and benzene and methods of treatment for 2-nitropropane and 2-ethoxyethanol. The Agency is considering future changes to the solvents previously promulgated to make the treatment standards compatible with those being promulgated today.

EPA's policy on BDAT is that organic constituents should be destroyed or reused. When BDAT is identified as a destruction technology, EPA normally sets treatment standards based on total concentration levels. As noted above, treatment levels of wastewater were expressed as TCLP at the time 51 FR 40572 was published. Data were not available for total constituent analysis of the treatment residuals. The best data available were TCLP concentration data; therefore, the standards were expressed as TCLP. It should be noted that these TCLP treatment levels were measured

Comment Number:	19-C-1 (continued)
Docket Number:	LD12-00110
Commenter:	THERMALKEM/CYANOKEM
Issue:	19-F002-F005
Subissue:	Treatment Standard
Response:	

from incineration residues and not from stabilization residues. However, EPA typically does not specify a technology when concentration-based standards are promulgated.

At this time, EPA is not revising the treatment standards promulgated for the other F001-F005 solvents (52 FR 40572); however, the Agency is not precluded from revising these standards at a future date.

Comment Number: 19-C-2
Docket Number: LD12-00149
Commenter: Cement Kiln Recycling Coalition
Issue: F002 - F005
Subissue: Treatment Standard
Comment:

D. Proposed Additional Treatment Standards for F002 and F005 Wastes:

The proposed concentration-based treatment standards for the new solvent constituents (i.e., 1,1,2-trichloroethane, benzene, 2-ethoxyethanol and 2-nitropropane) are expressed as a total concentration. However, the treatment standards for the other solvent constituents promulgated on November 8, 1986 are based on TCLP.

The Cement Kiln Recycling Coalition recommends that the treatment standards for the new solvent constituents be based on treatment standards for TCLP to be consistent with TCLP methods already promulgated for other constituents. This way, one test (i.e., TCLP) can be performed to demonstrate whether or not waste meets treatment standards. This would result in reduced sampling analysis costs for the regulated community. One other option is to change the existing treatment standards for other constituents on a total concentration basis, but this option is most likely to cause additional confusion to the regulated community.

Comment Number: 19-C-2

Docket Number: LD12-00149

Commenter: CEMENT KILN RECYCLING COALITION

Issue: 19-F002-F005

Subissue: Treatment Standard

Response:

In the proposed BDAT Background Document Amendment for F002 (1,1,2-Trichloroethane) and F005 (Benzene, 2-Ethoxyethanol, and 2-Nitropropane), November 1989, it is stated:

"Note that at the time treatment standards were originally promulgated for F001-F005 (51 FR 40572), useful data were not available on total constituent concentrations in nonwastewater residuals, hence TCLP was, at the time, considered to be the best available measure of performance for solvents in nonwastewaters. Since that time EPA has consistently promulgated total concentration standards for organic constituents in nonwastewater residuals, and proposes to do so for the four solvents being proposed for regulation here."

EPA's policy on BDAT is that organic constituents should be destroyed or reused; therefore, when BDAT is identified as a destruction technology, EPA will set treatment standards based on total concentration levels. At the time 51 FR 40572 was published, data were not available for total constituent analysis of the treatment residuals. The best data available were TCLP concentration data; therefore, the standards were expressed as TCLP.

At this time, EPA is not revising the treatment standards promulgated for the other F001-F005 solvents (51 FR 40572); however, the Agency is not precluded from revising these standards at a future date.

Comment Number: 19-C-3
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: F002 - F005
Subissue: Treatment Standard
Comment:

The HWTC members who operate incineration facilities have concerns that the treatment standards for the new F001-F005 solvent constituents are expressed on a total basis, yet the treatment standards for the other 25 solvent constituents promulgated November 8, 1986 are based on TCLP data. Ultimately, all incineration treatment standards should be set on a total basis, since EPA's policy on BDAT is that organic constituents can be destroyed, and that BDAT for destruction technologies must therefore be set on a total basis (see 53 Federal Register, Vol. 159, pg. 31146). Likewise, the legislative history emphasizes that organic constituents be destroyed (see Vol. 130, Congressional Record S9179, 7/25/84).

The HWTC supports these new standards on a total basis and urges EPA to revise the other 25 solvent constituents to a total basis. This is mainly as a practical matter, so that one test protocol can be performed to demonstrate compliance for these waste codes. It is also crucial environmentally since by retaining the TCLP standards for the 25 solvents, EPA is encouraging stabilization which has no effect in treatment or destruction of these organic constituents, but merely dilutes them to within the treatment standards.

Comment Number: 19-C-3
Docket Number: LD12-00172
Commenter: HAZARDOUS WASTE TREATMENT COUNCIL
Issue: 19-F002-F005
Subissue: Treatment Standard
Response:

In the proposed BDAT Background Document Amendment for F002 (1,1,2-Trichloroethane) and F005 (Benzene, 2-Ethoxyethanol, and 2-Nitropropane), November 1989, it is stated:

"Note that at the time treatment standards were originally promulgated for F001-F005 (51 FR 40572), useful data were not available on total constituent concentrations in nonwastewater residuals, hence TCLP was, at the time, considered to be the best available measure of performance for solvents in nonwastewaters. Since that time EPA has consistently promulgated total concentration standards for organic constituents in nonwastewater residuals, and proposes to do so for the four solvents being proposed for regulation here."

EPA's policy on BDAT is that organic constituents should be destroyed or reused; therefore, when BDAT is identified as a destruction technology, EPA will set treatment standards based on total concentration levels. At the time 51 FR 40572 was published, data were not available for total constituent analysis of the treatment residuals. The best data available were TCLP concentration data; therefore, the standards were expressed as TCLP.

At this time, EPA is not revising the treatment standards promulgated for the other F001-F005 solvents (51 FR 40572); however, the Agency is not precluded from revising these standards at a future date.

Comment Number: 19-C-4
Docket Number: LD12-00223
Commenter: CHEMPRO
Issue: F002-F005
Subissue: Treatment Standard
Comment:

Section III.A.6.o. "Additional Treatment Standards for F002 and F005"

The additional treatment standards itemized in this section are expressed as total concentrations, either as mg/l or as mg/kg. All previous treatment standards for F001-F005 wastes, promulgated with the second third land disposal ban, were specified as mg/l in the TCLP/ZHE extract. This inconsistancy needs to be resolved for the treatment standards final regulation.

Comment Number: 19-C-4
Docket Number: LD12-00223
Commenter: CHEMPRO
Issue: 19-F002-F005
Subissue: Treatment Standard
Response:

In the proposed BDAT Background Document Amendment for F002 (1,1,2-Trichloroethane) and F005 (Benzene, 2-Ethoxyethanol, and 2-Nitropropane), November 1989, it is stated:

"Note that at the time treatment standards were originally promulgated for F001-F005 (51 FR 40572), useful data were not available on total constituent concentrations in nonwastewater residuals, hence TCLP was, at the time, considered to be the best available measure of performance for solvents in nonwastewaters. Since that time EPA has consistently promulgated total concentration standards for organic constituents in nonwastewater residuals, and proposes to do so for the four solvents being proposed for regulation here." The Agency is promulgating treatment standards based on total concentration for 1,1,2-trichloroethane and benzene and methods of treatment for 2-ethoxyethanol and 2-nitropropane. The Agency is considering future changes to the solvent standards previously promulgated to make the treatment standards compatible with those being promulgated today.

EPA's policy on BDAT is that organic constituents should be destroyed or reused; therefore, when BDAT is identified as a destruction technology, EPA will set treatment standards based on total concentration levels. Therefore, these standards will be expressed in mg/l or mg/Kg. The standards promulgated during the Solvent Rule (51 FR 40572) are based on TCLP concentration data; therefore, they are properly expressed as mg/l in the TCLP/ZHE extract.

Comment Number: 19-C-5
Docket Number: LD12-00179
Commenter: The Dow Chemical Company
Issue: F002 - F005
Subissue: Treatment Standard
Comment:

XXXIII. TREATMENT STANDARDS FOR F002 AND F005.

54 Fed. Reg. 48,461 column 1

There appears to be some discrepancies in the BDAT treatment standards for 1,1,2-trichloroethane and 2-nitropropane. The text says the standard for 1,1,2-trichloroethane in wastewaters is 0.03 mg/l while the table says 0.054 mg/l; the text says 0.056 mg/l for 2-nitropropane in wastewater while the table says 0.073 mg/l and; the text says 7.6 mg/kg for 1,1,2-trichloroethane in non-wastewaters while the table says 6.2 mg/kg. Beyond these discrepancies, Dow believes that all BDAT levels should be based on leachate analysis rather than total constituent analysis since only the former represents that which is mobile in the environment and thus a threat to human health and the environment. (*See also* Comment XVII, page 14)

Comment Number: 19-C-5
Docket Number: LD12-00179
Commenter: THE DOW CHEMICAL COMPANY
Issue: 19-F002-F005
Subissue: Treatment Standard
Response:

EPA thanks the reader for pointing out the typographical errors for 1,1,2-trichloroethane in both wastewater and nonwastewater forms of F002 as well as for the wastewater treatment standard for 2-nitropropane in F005. The BDAT treatment standards for 1,1,2-trichloroethane (F002), benzene (F005), 2-ethoxyethanol (F005), and 2-nitropropane (F005) are finalized in today's rule as:

Constituent	Nonwastewater Total Concentration (mg/kg)	Wastewater Total Concentration (mg/L)
1,1,2-Trichloroethane	7.6	0.03
Benzene	3.7	0.07
2-Ethoxyethanol	Incineration	Biological Treatment
2-Nitropropane	Incineration	Incineration or steam stripping followed by carbon adsorption

EPA disagrees with the commenter's statement that BDAT levels should be based on leachate analysis rather than total constituent analysis. At the time treatment standards were originally promulgated for F001-F005, useful data were not available on total constituent concentrations in nonwastewater residuals, hence TCLP was, at the time, considered the best available measure of performance for solvents in nonwastewaters. Since that time, EPA has consistently promulgated total concentration standards for organic constituents in nonwastewater residuals, and is doing so for the four solvents being regulated in today's rule.

Comment Number: 19-C-5 (continued)
Docket Number: LD12-00179
Commenter: THE DOW CHEMICAL COMPANY
Issue: 19-F002-F005
Subissue: Treatment Standard
Response:

EPA's policy in the land disposal restrictions program is that organic constituents can be destroyed (or recycled) and, therefore, removal from the environment entirely and are no longer a threat to human health or the environment. When BDAT is a destruction technology, compliance with the treatment standard should be measured through a total constituent analysis.

Comment Number: 19-D-1

Docket Number: LD12-00110

Commenter: ThermalKem/Cyanokem

Issue: F002 - F005

Subissue: 2-Nitropropane Standard

Comment:

In a separate report, ThermalKEM as part of the HWTC interlaboratory study, has submitted to the LDR docket, data on PQLs on incinerator ash. The 2-nitropropane standard is one of the problematic standards discussed in this report, and we urge EPA not to set the final standard below 13.0 mg/Kg for this constituent based on these findings.

Comment Number: 19-D-1

Docket Number: LD12-00110

Commenter: THERMALKEM/CYANOKEM

Issue: F002-F005

Subissue: 2-Nitropropane Standard

Response:

The Agency has reexamined the data available for 2-nitropropane and has determined that concentration-based treatment standards cannot be promulgated at this time for either wastewater or nonwastewater forms of 2-nitropropane. As a result, the Agency is promulgating treatment standards for this constituent expressed as methods of treatment. We thank the commenter for the data, but the Agency will not use the data, given the change in the treatment standard to a technology-based standard.

For wastewaters containing 2-nitropropane, EPA is setting a treatment standard of incineration, or wet air oxidation followed by carbon adsorption or chemical oxidation followed by carbon adsorption (based on a transfer of BDAT from wastewaters containing nitrobenzene). For nonwastewater containing 2-nitropropane, EPA is setting a treatment standard of incineration.

Comment Number: 19-D-2
Docket Number: LD12 - 00172
Commenter: Hazardous Waste Treatment Council
Issue: F002 - F005
Subissue: 2-Nitropropane Standard
Comment:

In a separate report, the HWTC has submitted to the LD12 docket, data on PQLs on incinerator ash. The 2-nitropropane standard is one of the problematic standards discussed in this report, and the HWTC urges EPA not to set the final standard below the PQL for this constituent of 24 mg/kg based on those findings.

Comment Number: 19-D-2
Docket Number: LD12-00172
Commenter: HAZARDOUS WASTE TREATMENT COUNCIL
Issue: F002-F005
Subissue: 2-Nitropropane Standards
Response:

The Agency has reexamined the data available for 2-nitropropane and has determined that concentration-based treatment standards cannot be promulgated at this time for either wastewater or nonwastewater forms of 2-nitropropane. As a result, the Agency is promulgating treatment standards for this constituent expressed as methods of treatment. We thank the commenter for the data, but the Agency will not use the data, given the change in the treatment standard to a technology-based standard.

For wastewaters containing 2-nitropropane, EPA is setting a treatment standard of incineration, or wet air oxidation followed by carbon adsorption or chemical oxidation followed by carbon adsorption (based on a transfer of BDAT from wastewaters containing nitrobenzene). For nonwastewater containing 2-nitropropane, EPA is setting a treatment standard of incineration.

Comment Number: 19 - E - 1

Docket Number: LD12 - 00081

Commenter: Envirosafe Management Services

Issue: F002 - F005

Subissue: Definition of Wastewater and Solvent Mixtures

Comment:

EPA proposes a definition of wastewaters and non-wastewaters. In this definition, concern is raised as to why we do not have a consistent definition of wastewater for the Land Disposal Restriction programs as well as as for the F001, F002, F003, F004 and F005 solvent water mixtures.

Comment Number:	19-E-1
Docket Number:	LD12-00081
Commenter:	ENVIROSAFE MANAGEMENT SERVICES
Issue:	19-F002 - F005
Subissue:	Definition of Wastewater and Solvent Mixtures
Response:	

The Agency acknowledges the commenter's assertion of inconsistent definitions for wastewaters and nonwastewaters as well as for F001-F005 wastewaters. In the November 7, 1986 final rule (51 FR 40572), EPA promulgated treatment standards for F001-F005 wastewaters as measured by the TCLP extract. At the time the solvents rule was drafted, EPA had not given consideration to the effects of suspended solids on organic treatability; therefore, no suspended solids discussion was included in the definition of wastewaters at that time. In subsequent rulemakings EPA has promulgated standards based on total constituent composition, therefore, EPA has included suspended solids in the wastewater definition. Likewise, for these new solvents, EPA is using the current definition of wastewater which includes total suspended solids. Unless otherwise specified for a specific waste code, the definition of wastewater for the First, Second, and Third Third Rules is as follows: "Wastewaters are defined as wastes containing less than 1 percent (weight basis) total suspended solids and less than 1 percent (weight basis) total organic carbon (TOC)," unless otherwise stated.

ISSUE CODE 20: F006 - Electroplating Wastewater Treatment Sludges

A.-. Wastewater Definition
B.-. Treatment Standard
C.-. F006 Subcategory
D.-. Analytical Methods

Comment Number: 20 - A - 1
Docket Number: LD12 -00135
Commenter: USAF
Issue: F006
Subissue: Wastewater definition
Comment:

F006 WASTEWATERS:

As a general comment to that part of EPA's proposed rulemaking which establishes treatment standards for F006 wastewaters, it is our opinion that this waste code classification and the volume of these wastewaters are not sufficiently defined so as to allow EPA to finalize treatment standards in their third-third rulemaking. Due to the lack of a clear definition as to what constitutes this waste stream, it is likely that the volumes generated on an annual basis nation-wide have not been accurately estimated. In light of the guidance on F006 wastewaters provided to date, we suspect that EPA has significantly underestimated the volume of F006 wastewaters actually generated. Therefore, we recommend that EPA promulgate a clear definition of "F006 wastewaters," and that it grant a national capacity variance for F006 wastewaters.

Comment Number: 20-A-1 (cont)
Docket Number: LD12-00135
Commenter: USAF
Issue: F006
Subissue: Wastewater definition
Comment:

EPA is proposing "no land disposal" as BDAT for several of the First-Third wastes. ...It indicates that after examining available data, the agency has identified that: 1) the waste can be totally recycled without generating a prohibited residue; 2) the waste is not currently being land disposed; or 3) the waste is no longer being generated.

2. Further clarifications to "F006 wastewater":

Since F006 is defined as a sludge (presumptively a "nonwastewater") and given the regulatory discussions concerning "wastewaters," it appeared to us as though an "F006 wastewater" would have to be defined as a liquid "derived from" the treatment of F006 sludge which contains less than 1% TOC and less than 1% TSS. This conclusion appeared to be supported by subsequent rulemaking discussions.

Comment Number: 20-A-1 (cont)

Docket Number: LD12-00135

Commenter: USAF

Issue: F006

Subissue: Wastewater definition

Comment:

> F006 wastewaters are expected to result primarily from waste treatment operations in the electroplating or metal finishing industries. For example, the filter and/or clarifier overflow from treated electroplating wastewaters may be considered F006 wastewaters. F006 wastewaters may also be generated at a CERCLA site, during corrective action at a RCRA facility, or as a result of spills (Emphasis Added).

This statement must be wrong. An overflow from an electroplating wastewater clarifier is not an overflow of sludge precipitated from the treatment of the electroplating wastewater, and therefore is not an overflow of F006 as defined. At most, the overflow is an overflow of electroplating wastewater, or "treated effluent," or "supernatant," all of which EPA has defined as not constituting F006.

If EPA believes its statement to be correct, however, then its prior guidance is wrong, and must be revised. This circumstance is yet another example of the confusion as to what constitutes F006 wastewater, and therefore emphasizes the need for the promulgation of a clear definition of this waste stream. In light of the seeming uncertainty about its definition, generators will be unable to classify accurately their waste streams, and EPA will be unable to estimate accurately the volume of F006 wastewaters generated.

Comment Number: 20-A-1 (Cont)
Docket Number: LD 12-00135
Commenter: USAF
Issue: F006
Subissue: Wastewater definition
Comment:

Based on the preceding discussion, it is clear that F006 is a sludge, and that a sludge, for the purposes of the land disposal restrictions is categorized as "nonwastewater". It is also clear from that discussion that F006 nonwastewater sludges are the precipitated solids which are generated as a result of the treatment performed on electroplating wastewaters. The treated wastewater (i.e. the "treated effluent", which by definition is excluded from being classified as a sludge) is definitely not an F006 waste. Thus an "F006 wastewater" would have to be a wastewater "derived-from" the treatment etc. of an "F006 nonwastewater" sludge. That conclusion appeared to be substantiated by the preamble discussion contained in the May 17, 1988 First-Third proposed rule (see 53 FR 17588), where EPA proposed "no land disposal" as the treatment standard for F006 wastewater based on the conclusion that very little, if any, of that waste was generated:

COMMENT NUMBER: 20-A-1
DOCKET NUMBER: LD12-00135
COMMENTER: USAF
ISSUE: F006
SUBISSUE: Wastewater Definition
RESPONSE:

The commenter has recommended that the Agency promulgate a clear definition of F006 wastewaters, or clarify the November 22, 1989, Preamble. The Preamble was somewhat unclear. The Agency wishes to point out that F006 wastewater which results primarily from waste treatment operations in the electroplating of metal finishing industry, is clearly defined in the First Third Final Rule (53 FR 31153). It states that "the supernatant (from the clarifier) from F006 generation is not considered to be F006, but simply wastewater from the treatment of electroplating wastewater. Filtrate from F006 sludges could be hazardous under the derived from rule, but if it is similar in terms of identity and concentration of constituents in the influent to the wastewater treatment process, it is not considered to be derived-from F006. Rather it is the original influent wastewater." The commenter has requested further clarification to F006 wastewater regarding "F006 wastewater would not have to be defined as a liquid derived from the treatment of F006 sludge which contains less than 1% TOC and less than 1% TSS." The Agency wishes to point out that this statement is incorrect. The 1% TOC/TSS criteria do not determine if a wastewater is hazardous and coded as F006, by the derived rule. These criteria involve only whether something is a wastewater.

The resulting filtrate from filtration of F006 nonwastewater sludge could be directly discharged to the POTWs under NPDES permit. It also could be recycled back to the clarifier and discharged as clarifier and supernatant to POTWs under NPDES permit. If it is recycled to the clarifier, and the concentration of constituents in the normal influent

COMMENT NUMBER: 20-A-1 (continued)
DOCKET NUMBER: LD12-00135
COMMENTER: USAF
ISSUE: F006
SUBISSUE: Wastewater Definition
RESPONSE:

to the clarifier is similar or higher than the concentration of constituents in the recycled filtrate wastewater from the filter, then the filtrate and the clarifier overflow are not considered F006 wastewaters. If F006 filtrate wastewater is not recycled back to the clarifier, and subsequently comes in contact with a land disposal unit prior to discharge of POTWs, the contents of the land disposal unit, i.e., of surface impoundment, must meet the RCRA Land Disposal Restriction Standard for F006 wastewaters, regardless of its similarity to the clarifier influent or overflow.

In the First Third Final Rule the agency also indicated that it did intended to propose numerical wastewater standards for F006 wastewaters in the Third Third Final rule as opposed to a No Land Disposal because a facility may wish to store an F006 wastewater in a land disposal unit. Therefore, the Agency is promulgating treatment standards for cadmium, chromium, lead and nickel, and total and amenable cyanide based on technology performance data and similarity of wastestreams. USAF volumes have been taken into account in assessing available capacity.

Comment Number: 20-A-2
Docket Number: LD12-00135
Commenter: USAF
Issue: F006
Subissue: Wastewater definition
Comment:

In the August 17, 1988 final rule promulgating the land disposal restrictions for the First-Third scheduled wastes, EPA further clarifies their definition of F006 wastewaters and it is evident that the regulated community is uncertain as to whether or not they may be generating this confusing subcategory of a listed hazardous waste. EPA also deferred the establishment of final treatment standards until the May 8, 1990 deadline. The relevant discussion is found at 53 FR 31153:

> F006 waste is a sludge consisting of precipitated residues generated following treatment of wastewaters from electroplating operations. Several commentors have identified specific sources of wastewater forms of F006 such as those being generated at a CERCLA site, during a corrective action at a RCRA facility, and as a leachate from a landfill. Since generation of F006 wastewaters does occur, the premise of no generation as a basis for the standard of "no land disposal" appears to be unjustified.

Comment Number: 20-A - 2 (cont)
Docket Number: LD12 -00135
Commenter: USAF
Issue: F006
Subissue: wastewater definition
Comment:

(Please note as an interpretive matter, that supernatant from F006 generation is not considered to be F006, but simply wastewater from treatment of electroplating wastewaters. Filtrate from F006 sludge could be hazardous under the derived-from rule, but if it is similar in terms of identity and concentration of constituents in the influent to the wastewater treatment process, it is not considered to be derived-from F006. Rather, it is the original influent wastewater.)

COMMENT NUMBER: 20-A-2
DOCKET NUMBER: LD12-00135
COMMENTER: USAF
ISSUE: F006
SUBISSUE: Wastewater Definition
RESPONSE:

The Agency acknowledges the comment on clarification of F006 wastewater definition, based on the November 22, 1989, Preamble from the commenter. The Preamble was somewhat unclear. The Agency wishes to point out that F006 wastewater; which results primarily from waste treatment operations in the electroplating of metal finishing industry, is clearly defined in the First Third Final Rule (53 FR 31153). It states that "the supernatant (from the clarifier) from F006 generation is not considered to be F006, but simply wastewater from the treatment of electroplating wastewater. Filtrate from F006 sludges could be hazardous under the derived from rule, but if it is similar in terms of identity and concentration of constituents in the influent to the wastewater treatment process, it is not considered to be derived-from F006. Rather it is the original influent wastewater." The commenter has requested further clarification to F006 wastewater regarding "F006 wastewater would not have to be defined as a liquid derived from the treatment of F006 sludge which contains less than 1% TOC and less than 1% TSS." The Agency wishes to point out that this statement is incorrect. The 1% TOC/TSS criteria do not determine if a wastewater is hazardous and coded as F006 by the derived from rule. These criteria involve only whether something is a wastewater.

The resulting filtrate from filteration of F006 nonwastewater sludge could be directly discharged to the POTWs under NPDES permit. It also could be recycled back to the clarifier and discharged as clarifier and supernatant to POTWs under NPDES permit. If it is recycled to the clarifier the concentration of constituents in the normal influent to the

COMMENT NUMBER: 20-A-2 (continued)
DOCKET NUMBER: LD12-00135
COMMENTER: USAF
ISSUE: F006
SUBISSUE: Wastewater Definition
RESPONSE:

clarifier is similar or higher than the concentration of constituents in the recycled filtrate wastewater from the filter, then the filtrate and the clarifier overflow are not considered F006 wastewaters. If F006 filtrate wastewater is not recycled back to the clarifier, and subsequently comes in contact with a land disposal unit prior to discharge of POTWs, the contents of the land disposal unit, i.e., of surface impoundment, must meet the RCRA Land Disposal Restriction Standard, for F006 wastewaters, regardless of its similarity to the clarified influent or overflow.

In the First Third Final Rule the agency indicated that it intended to propose numerical wastewater standards for F006 wastewaters in the Third Third Final rule as opposed to a No Land Disposal because a facility may wish to store a F006 wastewater in a land disposal unit. Therefore the Agency is promulgating treatment standards for cadmium, chromium, lead, nickel, and total and amenable cyanide based on technology performance data and similarity of wastestreams. USAF volumes have been taken into account in assessing available capacity.

Comment Number: 20 - A - 3
Docket Number: LD-12-00127
Commenter: Northwestern Plating Works Inc
Issue: F006
Subissue: Wastewater definition
Comment:

F006 Waste Waters

The November 22, 1989 Federal Register on page 48447 the EPA further states... " F006 wastewaters are expected to result primarily from waste treatment operations in the electroplating and metal finishing industries. For example, the filter and clarifier overflow from treating electroplating wastewaters may be considered wastewaters."... This definition of F006 wastewaters is unclear as proposed and could be misinterpreted as those waters resulting from the pretreatment of the rinse waters in the electroplating and metal finishing industries that generate the F006 filter cake as a by product of meeting the clean water standards.

A better definition would be .... F006 wastewaters are the resultant water discharge from the further treatment or dewatering of F006 nonwastewater residuals derived from a pretreatment system.

COMMENT NUMBER:	20-A-3
DOCKET NUMBER:	LD12-00012
COMMENTER:	NORTHWESTERN PLATING WORKS
ISSUE:	F006
SUBISSUE:	Wastewater Definition
RESPONSE:	

The Agency acknowledges the commenter's statement that F006 wastewater description was unclear as proposed. The Agency wishes to point out that F006 wastewater which results primarily from waste treatment operations in the electroplating of metal finishing industry, is clearly defined in the First Third Final Rule (53 FR 31153). It states that "the supernatant (from the clarifier) from F006 generation is not considered to be F006, but simply wastewater from the treatment of electroplating wastewater. Filtrate from F006 sludges could be hazardous under the derived from rule, but if it is similar in terms of identity and concentration of constituents in the influent to the wastewater treatment process, it is not considered to be derived-from F006. Rather it is the original influent wastewater."

The resulting filtrate from filtration of F006 nonwastewater sludge could be directly discharged to the POTWs under NPDES permit. It also could be recycled back to the clarifier and discharged as clarifier supernatant to POTWs under NPDES permit. If it is recycled to the clarifier the concentration of constituents in the normal influent to the clarifier is similar or higher than the concentration of constituents in the recycled filtrate wastewater from the filter, then the filtrate and the clarifier overflow are not considered F006 wastewaters. If F006 filtrate wastewater is not recycled back to the clarifier, and subsequently comes in contact with a land disposal unit prior to discharge of POTWs, the contents of the land disposal unit, i.e., of surface impoundment, must meet the RCRA Land Disposal Restriction Standard.

COMMENT NUMBER: 20-A-3 (continued)
DOCKET NUMBER: LD12-00012
COMMENTER: NORTHWESTERN PLATING WORKS
ISSUE: F006
SUBISSUE: Wastewater Definition
RESPONSE:

In the First Third Final Rule the agency also indicated that it did intended to propose numerical wastewater standards for F006 wastewaters in the Third Third Final rule as opposed to a No Land Disposal because a facility may wish to store a F006 wastewater in a land disposal unit. In today's rule the Agency is promulgating treatment standards for cadmium, chromium, lead, nickel, and total and amenable cyanide based on technology performance data and similarity of wastestreams. USAF volumes have been taken into account in assessing available capacity.

Comment Number: 20-B-1
Docket Number: LD12-00272
Commenter: General Dynamics
Issue: F006
Subissue: Treatment Standard
Comment:

THE FOLLOWING COMMENTS ARE OFFERED IN SPECIFIC RESPONSE TO THE F006 WASTEWATER STANDARD

Since we do not currently land-dispose F006 wastewaters, this proposed rule does not immediately affect us. Our main concern,

however, is the fact that the EPA is proposing standards which are more stringent than the pretreatment standards already required by the Clean Water Act. [Pretreatment Standards, Title 40, 400 Series of the Federal Water Pollution Control Act (1974) as amended by the 1977 Clean Water Act]. For example, the proposed chromium limit on F006 wastewater is 0.32 mg/L, while the current pretreatment standard for chromium discharge to the POTW is 2.7 mg/L.

By passing more stringent limits, the EPA may be inclined to lower the pretreatment limits as well. Doing so would place a tremendous burden on the industry to meet such limits. For this reason, we oppose the imposition of limits on the land disposal of F006 wastewaters which are more stringent than those already required by the pretreatment standards under the Clean Water Act.

COMMENT NUMBER: 20-B-1
DOCKET NUMBER: LD12-00272
COMMENTER: GENERAL DYNAMICS
ISSUE: F006
SUBISSUE: Treatment Standard
RESPONSE:

The Agency acknowledges the concerns of the commenter about pretreatment levels. The purpose of RCRA standards developed to support Land Disposal Restriction is to prevent migration of contaminant to groundwater and surface soils. If F006 wastes are not placed in Land Disposal units such as surface impoundments, they are exempt from the RCRA Land Disposal standard under (40 CFR Section 261.3a.1 iv). Consequently such wastes need only meet the pretreatment standard for discharge. The commenter is correct in stating that EPA is proposing standards which are more stringent than Clean Water Act. However if F006 wastewater comes in contact with a land disposal unit prior to discharge, the constituents of land disposal unit, i.e., of a surface impoundment, must meet the RCRA Land Disposal Restriction standard.

The achievement of standards for hazardous wastes is based on the BDAT which substantially diminish the concentration and/or leachability of the wastes by the "best" technology. BDAT standards do not relate to toxicity or to the achievement of "best economically feasible" technology standard; they relate only to the "best" technology that is demonstrated and available. By achieving the technology standard, we clearly reduce the concentration of the contaminant and hence, reduce risks to human health and environment.

The Agency reviewed the characteristics data available for F006 waste (Final Background Document for a F006, May 90). The Agency believes that the data on the K062 wastewater are better because metal-bearing K062

COMMENT NUMBER: 20-B-1 (continued)
DOCKET NUMBER: LD12-00272
COMMENTER: GENERAL DYNAMICS
ISSUE: F006
SUBISSUE: Treatment Standard
RESPONSE:

wastewaters contain higher concentrations of dissolved metals than waste characterization data for F006 wastewaters and, therefore, represent a more difficult waste to treat (i.e., arsenic in K062 wastewater as high as 3 mg/l compared to 0.064 mg/l in the Office of Water data; cadmium in K062 wastewater as high as 23 mg/l compared to 21.5 mg/l in the Office of Water data; total chromium in K062 wastewater as high as 7,000 mg/l compared to 35.4 mg/l in Office of Water data; lead in K062 wastewater as high as 212 mg/l compared to 42.3 mg/l in the Office of Water data; and nickel as high as 100,310 mg/l compared to 415 mg/l in the Office of Water data). Hence the treatment standards are valid and are being promulgated.

Comment Number: 20 - B-2
Docket Number: LD12 - 00122
Commenter: Deere + Company
Issue: F006
Subissue: Treatment Standard
Comment:

2. All F006 wastes are not generated by treatment of electroplating rinsewaters by alkaline chlorination. Paint sludges generated by our factories would be very difficult to treat to the 94 ppb TCLP standard. Other waste streams should be studied before accepting the K062 data as applicable for all waste streams.

COMMENT NUMBER: 20-B-2
DOCKET NUMBER: LD12-00122
COMMENTER: DEERE AND COMPANY
ISSUE: F006
SUBISSUE: Treatment Standard
RESPONSE:

The commenter discusses treatment to a 94 ppb (0.094 ppm) TCLP standard. There are no F006 standards for any constituent that contain the number 94 ppm. However, EPA wishes to point out that F006 nonwastewater standards were promulgated in the Second Third rule and that the standards are based on the performance data from the stabilization technology of F006 and not based on transfer of data from K062, as suggested by the commenter. The 94 ppb number which the commenter alludes to is the treatment standard for chromium (total) in K062 nonwastewater, whereas the chromium (total) standards for F006 nonwasterwater is 5.2 mg/l. The Agency also wishes to point out that only K062 wastewater data was transferred to F006 wastewater.

The commenter also discusses the fact that his paint sludges will be difficult to treat to 94 ppb standard. The standard for chromium (total) is 5.2 mg/l as measured by TCLP leachate. The paint industry would not, however, generate a waste classified as F006 because F006 waste is defined as electroplating waste and is not related to the paint industry. The commenter may be mixing his F006 wastes with paint sludges or paint sludges derived from wastewater treatment. EPA believes that treatment of both streams to remove the appropriate contaminants, metals and cyanides for F006, and metals and organics from paint sludges, should take place, prior to mixing of wastes for central treatment or discharge.

Comment Number: 20 - B - 3
Docket Number: LD 12 - 00270
Commenter: Etican
Issue: F006
Subissue: Treatment Standard
Comment:

5. [3.A.6.a.(1)] F006 Wastewaters page 48448

F006 sludge containing cyanides will require resolution to treat the cyanide in the aqueous phase. Incineration of metal sludges is not always possible due to the metal content. The resultant solution and suspension can be the same if not worse than typical liquid cyanide streams. They can contain higher concentrations than some F007, F008, and F009 wastewater streams, especially if the amount of dilution water is minimized.

COMMENT NUMBER: 20-B-3
DOCKET NUMBER: LD12-00270
COMMENTER: ETICAM
ISSUE: F006
SUBISSUE: Treatment Standard
RESPONSE:

F006 cyanide treatment standards for nonwastewaters are based on the performance of alkaline chlorination. EPA promulgated treatment standards for these wastes in the Second Third rule. The Agency is not discussing the promulgating of cyanides standards for F006 wastes in today's rule. Based on the performance of this technology EPA is setting numerical treatment standards. Any generator of F006 has the option of using any technology that will achieve the treatment standard. Therefore he may remove cyanide by alkaline chlorination or incineration, or any other technology he chooses. EPA agrees that nonwastewater cyanides may require resolution, so that the cyanide can be treated in the aqueous phase (reslurring of F006 nonwastewaters may increase cyanide "treatment recovery efficiency").

If alkaline chlorination does not sufficiently destroy cyanide in plating wastewater, the cyanide present in plating wastewater becomes contained in the F006 sludge. Reslurring of F006 sludge and retreating by alkaline chlorination may increase cyanide treatment efficiencies.

If treatability (cyanide concentration reduction) cannot be achieved by the commenter from a well-designed and well-operated treatment system, then the commenter must provide data to prove nonachievability of the standard in an application for variance.

Comment Number: 20-B-4

Docket Number: LD12-00143

Commenter: General Motor Corporation

Issue: F006

Subissue: Treatment Standard

Comment:

F006 Wastewaters

GM believes that the proposed BDAT treatment standards (page 38448) for F006 wastewaters are inappropriate. As stated previously, "treatment for treatment's sake" should not be the objective of the regulations. We therefore recommend that the limits for the metals be established at the existing characteristic levels, as measured in the leachate generated in the EP Toxicity test.

COMMENT NUMBER: 20-B-4
DOCKET NUMBER: LD12-00143
COMMENTER: General Motors Corporation
ISSUE: F006
SUBISSUE: Treatment Standard
RESPONSE:

Under HSWA, EPA is required to set "levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the wastes so that short-term and long-term threats to human health and the environment are minimized." EPA has established the treatment standards for this waste based on the performance of the best demonstrated available technology (BDAT) to treat the waste. The Agency disagrees with the commenter that treatment standards for F006 wastewaters are inappropriate. The Agency reviewed the characteristic data available for F006 wastes (Final Background Document for F006, May 1990).

The Agency believes that the data on the K062 wastewater are better because metal-bearing K062 wastewaters contain higher concentrations of dissolved metals than waste characterization data for F006 wastewaters and, therefore, represent a more difficult waste to treat (i.e., arsenic in K062 wastewater as high as 3 mg/l compared to 0.064 mg/l in the Office of Water data; cadmium in K062 wastewater as high as 23 mg/l compared to 21.5 mg/l in the Office of Water data; total chromium in K062 wastewater as high as 7,000 mg/l compared to 35.4 mg/l in Office of Water data; lead in K062 wastewater as high as 212 mg/l compared to 42.3 mg/l in the Office of Water data; and nickel as high as 100,310 mg/l compared to 415 mg/l in the Office of Water data). Hence the treatment standards are valid and are being promulgated.

Comment Number: 20 - C - 1
Docket Number: LD 12 - 00127
Commenter: Northwestern Plating Works Inc
Issue: F006
Subissue: F006 (Subcategory)
Comment:

In the instance of F006 nonwaste water residue high in iron cyanides generated as a result of cyanide plating on ferrous base materials the Agency should consider a separate sub-catagory of F006 with an appropriate, accurate, reproducible test protocol

COMMENT NUMBER: 20-C-1
DOCKET NUMBER: LD12-00127
COMMENTER: NORTHWESTERN PLATING WORKS, INC.
ISSUE: F006
SUBISSUE: Subcategory for F006
RESPONSE:

The Agency acknowledges the commenters request to consider a separate subcategory and an appropriate accurate, reproductible test protocol. At the time of the promulgation of the Second Third rule, the Agency investigated developing a separate subcategory of F006 wastes based on the iron concentration of the untreated wastes. These available data showed that there were no correlation between iron concentration in untreated wastes and the total cyanide concentration in the sludge. Therefore, the Agency could not justify developing a subcategory of F006.

The Agency realizes that there are inherent problems in the cyanide analytical test. Because of these problems, the Agency is promulgating constraint of sample size and distillation time for all cyanide wastes. These constraints are using a 10 gram sample and a one hour and 15 minute distillation time.

The Agency promulgated F006 nonwastewater cyanide treatment standards based on data received in response to the Second Third rule. These standards were based on a well-designed and well-operated alkaline chlorination treatment system. The treatment standards have been derived from treatment of mixed wastes (F006, F007, F008, F009 and other wastes) which showed that the mixed wastes were similar to, and more difficult to treat than, F006 untreated wastewaters. In fact, the untreated waste concentration of mixed wastes (data from a commenter's response to Second Third rule) ranged from 1,200 to 70,000 mg/l total cyanide and 250 to 12,000 mg/l iron. In contrast, characterization data for electroplating

COMMENT NUMBER: 20-C-1 continued
DOCKET NUMBER: LD12-00127
COMMENTER: NORTHWESTERN PLATING WORKS, INC.
ISSUE: F006
SUBISSUE: Subcategory for F006
RESPONSE:

rinsewater (F006 precursors) reported in the background document for effluent limitations guidelines and standards for metal finishing point source category gave typical ranges for cyanide and iron as 0-150 mg/l and 0.5 - 1,500 mg/l, respectively. This supports EPA's contention that mixed wastes were similar to and more difficult to treat than F006 untreated waste from metal finishing industry. Alkaline chlorintion of aqueous cyanide streams is a standard methodology of treatment that destroys cyanide in the waste, and thus substantially diminishes the ultimate toxicity of the wastewater treatment sludge.

If the sludge resulted from wastewater that was not treated for cyanide destruction, the sludge can be slurried with water and then treated by alkaline chlorination. This was, in fact, done by the commenter who provided the data on which the treatment standards are based. If the cyanide treatment standard was not achieved, the wastewater treatment sludge could be reslurried with water and retreated by alkaline chlorination. As indicated by EPA's 1986 National Survey of hazardous waste generators, greater than 90 percent of the facilities generating F006 wastes could meet the treatment standard without further treatment.

Comment Number: 20-C-2
Docket Number: LD12-00155
Commenter: American Electroplaters & Surface Finishers Society
Issue: F006
Subissue: F006 (Subcategory)
Comment:

We also urge the agency to consider placing filter cake wastes from metal finishing operations using cyanide on ferrous substrates in a separate subcategory since it is apparent that the agency was not aware of the special problems such waste generators are faced with following the second third ban. The agency could define such a subcategory by the percent (we would suggest 25%) of the total gallonage of plating solutions in a given shop that is used for cyanide plating on ferrous substrates. The agency could create the subcategory only for existing facilities to prevent abuse of the new subcategory by future construction. The new subcategory would include production data demonstrating that the majority of parts cyanide plated were ferrous on their biannual continued compliance reports required by the clean water act and they would certify same with each manifested load of waste.

This new subcategory would be required to demonstrate twice per year that their cyanide destruct system was "well operated". This would be accomplished by reporting total, reactive and amenable to chlorination cyanide results before and after treatment.

This new category would be regulated by the extractable cyanide test. A 24 hour extraction with neutral water (pH 8) could not yield a higher value than 10 mg/L. The extraction hardware and procedure would be similar to the TCLP.

Since the agency has quoted Senator Chaffee in the past, we would also do the same: "It is not intended that every waste receive repetitive or ultimate levels of treatment"

Since F-006 wastes containing stable complexed iron cyanides have already been chlorinated once prior to their generation, and further chlorination of such wastes provides little if any treatment, it would be prudent if the agency either created a subcategory for such wastes or if the agency developed standards based on true analyses of such wastes and a sound data base.

COMMENT NUMBER: 20-C-2
DOCKET NUMBER: LD12-00155
COMMENTER: AMERICAN ELECTROPLATERS AND SURFACE FINISHERS SOCIETY
ISSUE: F006
SUBISSUE: Subcategory for F006
RESPONSE:

The Agency wants to point out that F006 nonwastewater standards were promulgated in the Second Third Rule. In developing the treatment standards, EPA first characterizes the waste(s). As necessary, EPA may establish treatability groups for wastes having similar physical and chemical properties. That is, if EPA believes that wastes represented by different waste codes could be treated to similar concentrations using identical technologies, the Agency combines the codes into one treatability group. EPA generally considers wastes to be similar when they are both generated from the same industry and from similar processing stages. In addition, EPA may combine two or more separate wastes into the same treatability group when data are available showing that the waste characteristics affecting performance are similar or that one waste would be expected to be less difficult to treat.

Once the treatability groups have been established, EPA collects and analyzes data on identified technologies used to treat the wastes in each treatability group. The technologies evaluated must be demonstrated on the waste or a similar waste and must be available for use.

The Agency is regulating total and amenable cyanides as opposed to extractables. The Agency has reviewed the data submitted by commenters on the level of leachable cyanides and the analysis of the data appears in the background document for cyanide wastes and in the administrative record for Third Third proposed rule.

COMMENT NUMBER: 20-C-2 (continued)
DOCKET NUMBER: LD12-00155
COMMENTER: AMERICAN ELECTROPLATERS AND SURFACE FINISHERS SOCIETY
ISSUE: F006
SUBISSUE: Subcategory for F006
RESPONSE:

The Agency believes that the legislative history to RCRA Section 3004(M) indicates that Congress intended that the "destruction of tal cyanides would be required as a precondition to land disposal" (130 Congressional Record S9179, July 25, 1984, statement of Senator Chaffee). The treatment standard for the cyanide constituent is based on a total waste analysis for amenable and total cyanide concentration for two reasons. First, the Agency believes that it is necessary to regulate the total concentration of cyanide in wastes that are land disposed, and by basing BDAT standards only on amenable cyanide concentration, the complex-metal cyanides that are present in the wastes would not be regulated. Second, based on the review of the available treatment data, the Agency believes that the conventional cyanide treatment technologies provide substantial treatment of the amenable and total cyanide concentration as measured by a total waste analysis by Method 9010 (EPA Publication SW-846; see amendment to this method in the Background Document for Cyanide Wastes, May 1990).

The Agency believes that the legislative history to RCRA Section 3004(m) indicates that Congress intended that the "destruction of total cyanides would be required as a precondition to land disposal" (130 Congressional Record S9179, July 25, 1984, statement of Senator Chaffee). The treatment standard for the cyanide constituent is based on a total waste analysis for amenable and total cyanide concentration for two reasons. First, the Agency believes that it is necessary to regulate

COMMENT NUMBER: 20-C-2 (continued)
DOCKET NUMBER: LD12-00155
COMMENTER: AMERICAN ELECTROPLATERS AND SURFACE FINISHERS SOCIETY
ISSUE: F006
SUBISSUE: Subcategory for F006
RESPONSE:

the total concentration of cyanide in wastes that are land disposed, and by basing BDAT standards only on amenable cyanide concentration, the complex-metal cyanides that are present in the wastes would not be treated. Complexed cyanides, although not as toxic as "free" cyanides, are nevertheless not environmentally benigh. The Agency believes there is a real potential for complexed cyanides in these wastes to at least partially degrade into the more toxic form of cyanides known as "free" cyanides, under the influence of ultraviolet light. Wastes placed in certain types of land dispoal units, such as surface impoundments, are likely to be exposed to ultraviolet light. Second, based on the review of the available treatment data, the Agency believes that the conventional cyanide treatment technologies provide substantial treatment of the amenable and total cyanide concentration as measured by a total waste analysis by Method 9010 (EPA Publication SW-846; see amendment to this method in the Background Document for Cyanide Wastes, May 1990).

The Agency acknowledges the commenters request to consider a separate subcategory and an appropriate accurate, reproductible test protocol. At the time of the promulgation of the Second Third rule, the Agency investigated developing a separate subcategory of F006 wastes based on the iron concentration of the untreated wastes. These available data showed that there were no correlation between iron concentration in untreated wastes and the total cyanide concentration in the sludge. Therefore, the Agency could not justify developing a subcategory of F006.

COMMENT NUMBER: 20-C-2 (continued)
DOCKET NUMBER: LD12-00155
COMMENTER: AMERICAN ELECTROPLATERS AND SURFACE FINISHERS SOCIETY
ISSUE: F006
SUBISSUE: Subcategory for F006
RESPONSE:

The Agency realizes that there are inherent problems in the cyanide analytical test. Because of these problems, the Agency is promulgating constraint of sample size and distillation time for all cyanide wastes. These constraints are using a 10 gram sample and a one hour and 15 minute distillation time.

The Agency promulgated F006 nonwastewater cyanide treatment standards based on data received in response to the Second Third rule. These standards were based on a well-designed and well-operated alkaline chlorination treatment system. The treatment standards have been derived from treatment of mixed wastes (F006, F007, F008, F009 and other wastes) which showed that the mixed wastes were similar to, and more difficult to treat than, F006 untreated wastewaters. In fact, the untreated waste concentration of mixed wastes (data from a commenter's response to Second Third rule) ranged from 1,200 to 70,000 mg/l total cyanide and 250 to 12,000 mg/l iron. In contrast, characterization data for electroplating rinsewater (F006 precursors) reported in the background document for effluent limitations guidelines and standards for metal finishing point source category gave typical ranges for cyanide and iron as 0-150 mg/l and 0.5 - 1,500 mg/l, respectively. This supports EPA's contention that mixed wastes were similar to and more difficult to treat than F006 untreated waste from metal finishing industry. Alkaline chlorintion of aqueous cyanide streams is a standard methodology of treatment that destroys cyanide in the waste, and thus substantially diminishes the ultimate toxicity of the wastewater treatment sludge.

COMMENT NUMBER: 20-C-2 (continued)
DOCKET NUMBER: LD12-00155
COMMENTER: AMERICAN ELECTROPLATERS AND SURFACE FINISHERS SOCIETY
ISSUE: F006
SUBISSUE: Subcategory for F006
RESPONSE:

If the sludge resulted from wastewater that was not treated for cyanide destruction, the sludge can be slurried with water and then treated by alkaline chlorination. This was, in fact, done by the commenter who provided the data on which the treatment standards are based. If the cyanide treatment standard was not achieved, the wastewater treatment sludge could be reslurried with water and retreated by alkaline chlorination. As indicated by EPA's 1986 National Survey of hazardous waste generators, greater than 90 percent of the facilities generating F006 wastes could meet the treatment standard without further treatment.

1 of 3

Comment Number: 20-D-1

Docket Number: LD12-00155

Commenter: American Electroplaters and Surface Finishers Soci

Issue: Fccl

Subissue: Analytical method

Comment:

1. PROBLEMS WITH ANALYTICAL PROCEDURES
The Agency has promulgated total and amenable to chlorination cyanide standards for F-006 wastes without regard to the lack of an adequate method for compliance monitoring. In our previous comments, we urged the Agency to provide us with a procedure for compliance monitoring along with the standards because we felt that SW846 had no such procedure. It was apparent to us from comments made by the source of the Agency's data base that either the treatment facility had never dealt with an F-006 filter cake or that the analytical procedure they were using yielded low total cyanide values. We refer to the statement made by the treatment facility that a well operated cyanide treatment system will not generate a waste containing more than about 500 mg/Kg of total cyanide. Our experience was to the contrary; most every metal finishing facility that performs cyanide plating on ferrous substrates and generates an F-006 filter cake from a waste treatment system that is operated in exemplary fashion will generate an F-006 waste with more than 1000mg/Kg when analyzed using a small sample size and long reflux time.

This knowledge was passed on to the agency following the promulgation of the second third ban. We are discouraged and disappointed that the agency characterized our transmission of such knowledge as an attempt to have the agency give official sanction of a "loophole". Our intent was NOT to receive sanction of a "loophole". We wanted to tell the agency that F-006 waste from well operated treatment systems contains higher levels of total cyanide than the agency was aware of. We also wanted to point out that the agency has a method for analyzing total cyanide that is suitable only for wastewater and liquid wastes. Method 9010 of SW846 is not suitable for the determination of total cyanide in solid, dry, F-006 filter cake. The analytical result obtained by Method 9010 is directly related to sample size. Contrary to what is published by the agency in the proposed regulations, Method 9010 does specify a reflux time of one hour. The data we submitted to the agency after the promulgation of the second third clearly showed that one hour was NOT sufficient to yield total cyanide results on F-006 solid wastes from metal finishers that perform cyanide plating on ferrous substrates.

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Comment Number: 20-D-1 (con't)
Docket Number: LD12-00155
Commenter: American Electroplaters and Surface Finishers Society
Issue: F006
Subissue: Analytical method
Comment:

The agency now proposes to close this "loophole" by specifying a sample size RANGE of 0.5 to 10 grams. Data we include with this comment submittal clearly demonstrates that specifying such a range will not solve the analytical problem and will perpetuate the mass confusion already created. Furthermore, we strongly object to the cavalier attitude the agency apparently is taking by attempting to repair a serious analytical problem by amending the procedure without evaluating the amendment for its adequacy. Does the agency have data that shows that any sample of F-006 waste from cyanide plating on ferrous substrates between 0.5 and 10 grams will yield identical accurate total cyanide results? We don't think so. Until the agency has thoroughly evaluated and performed the necessary QA/QC to prove that it has a valid procedure for the determination of total cyanide in solid wastes, it would be far more prudent to leave well enough alone.

The agency must also provide the regulated community with a valid analytical method for the determination of cyanide amenable to chlorination on solid F-006 wastes. The amenable regulations were not based on a data base but were "calculated" by the agency based on the reproducibility of method 9010. Many laboratories attempting to analyze F-006 wastes for cyanide amenable to chlorination using method 9010 are obtaining high negative values (typically -1200 mg/Kg). Such high negative values are not acceptable by the protocol but are reproducible and will not change unless the total cyanide before and after chlorination is performed using method 9010 AND a large sample size (typically 50 grams). How does the agency propose to resolve this dilemma?

We urge the agency to reconsider our previous recommendation that extractable cyanide be regulated rather than total or amenable cyanide. Extractable cyanide can be determined using method 9010 upon a liquid extract (perhaps water at neutral pH). Method 9010 would then be valid and the sample size issue would disappear. We would be pleased to consider participation in the development of such a procedure and we are convinced that such a procedure would detect a high concentration of cyanide in an F-006 waste from a poorly operated destruction system and a much lower value (probably none detected) from a well operated destruction system.

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Comment Number: 20-D-1 (cont)

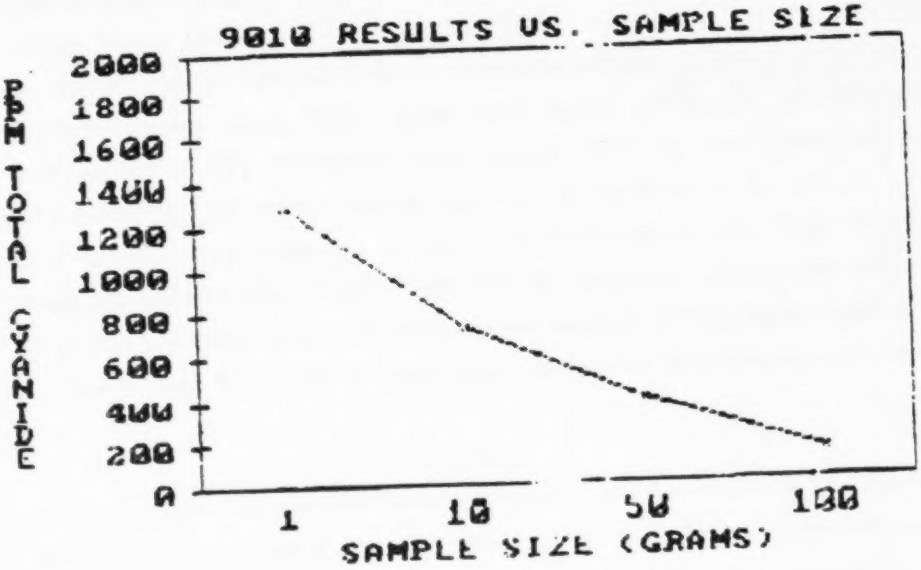
Docket Number: RD12-00155

Commenter: American Electroplaters and Surface Finishers Society

Issue: F006

Subissue: Analytical method

Comment:



The above graph illustrates the analytical test results obtained using method 9010 of SW 846 on a sample of F-006 filter cake from a metal finishing operation involving the use of cyanide plating solutions on ferrous substrates. The data clearly demonstrates that the proposed sample size range of 0.5-10 grams for method 9010 will not resolve the problem of the method yielding results that vary significantly with sample size

Comment Number: 20-D-1
Docket Number: LD12-00155
Commenter: AMERICAN ELECTROPLATERS AND SURFACE FINISHERS SOCIETY
Issue: F006
Subissue: Analytical Method
Response:

The Agency disagrees with the commenter that cyanide plating on ferrous substrates generates a F006 waste with more than 1,000 mg/kg when analyzed using a small sample size and a long reflex time. Before the promulgation of the Seond Third Final Rule, the Agency received waste characterization data on F006 wastes from industry, and reviewed the 1986 National Survey of Hazardous Waste Generators. Over 90 percent of these data showed that the concentration of total cyanides was less than the promulgated treatment standard of 590 ppm. This information suggest that the treatment standard is achievable and that conventional cyanide treatment can provide substantial reduction of amenable and total cyanides.

The Agency disagrees that the analytical method is only suitable for solids. The Agency has data to support that this method can be used to analyze cyanides in nonwastewaters. The analytical method used to develop the promulgated cyanide treatment standard is Method 9012 using a sample size of 10 grams and a distillation time of one hour. Therefore, the Agency is promulgating an amendment to Method 9012 requiring that in order to comply with BDAT, a sample size of 10 grams and a distillation time of one hour and 15 minutes should be used.

The Agency points out to the commenter that obtaining negative concentration levels for amenable cyanides which substantially means zero only means that the cyanides present in the total cyanide analysis are

Comment Number: 20-D-1 (continued)
Docket Number: LD12-00155
Commenter: AMERICAN ELECTROPLATERS AND SURFACE FINISHERS SOCIETY
Issue: F006
Subissue: Analytical Method
Response:

not amenable to chlorination. In fact, these cyanide species are probably all metal complex cyanides.

The Agency strongly disagrees with the commenter that the cyanide treatment standard should be based on leachable levels. The Agency believes that it is necessary to control the total waste cyanide composition. If standards were based on leachable levels, the complex cyanide in the waste would not be regulted. Also, the Agency believes that conventional cyanide treatment can provide substantial treatment of both amenable and total cyanides.

1 of 2

Comment Number: 26 - D - 2
Docket Number: LD12-00127
Commenter: Northwestern Plating Works Inc
Issue: F006
Subissue: Analytical Method
Comment:

The Method 9010 of SW 846 was developed to test the Total and Amenable cyanides in WASTEWATERS not in the NONWASTEWATERS as is the form of the F006 filter cake generated by the operation of a pretreatment system.

Proposed Treatment Standards for Additional Waste Code Specific Treatability Groups

The Federal Register of November 22,1989 on page 48447 states the following:

....."EPA regards the lack of specificity as to the sample size and distillation time in the description of Method 9010 to be potential loopholes that could allow persons to misuse the analytical method in order to demonstrate compliance without treating the waste."...

By this comment the Agency acknowledges the point, supported by industry, that there are wide variations in results using this inappropriate test method. The further conclusion that the lack of specificity in the test method also yields a data base of questionable accuracy which was used to set the limits for the land ban standard. The arbitrary imposition of the .5 to 10 gram sample size and a reflux time of one hour to one hour and

2 of 2

Comment Number: 20-D-2 (con't)
Docket Number: LD12-00127
Commenter: Northwestern Plating Works Inc
Issue: Fock
Subissue: Analytical Method
Comment:

fifteen minutes sustains the inaccuracies of the test method and its' results. Further this calls to question the fact that the Agency is not following its own rigorous procedures of QA and QC requirements to verify the appropriateness and accuracy of these fixes to Method 9010 of SW846. Additionally because of the wide variations in test results the QA/QC procedures, if used at all in developing the original data base must also be questioned.

The Agencies proposal to set a range of limits on sample size and reflux time on SW 846 Method 9010 perpetuates the problems of test results for compliance verification of a method developed to test cyanide levels in a liquid, and not in a non-wastewater solid. The Agency does not and cannot demonstrate the effectiveness of this proposal nor can it substantiate that proper science and quality assurance procedures were followed in the modification of the standard.

Comment Number: 20-D-2
Docket Number: LD12-00127
Commenter: Northwestern Plating Works, Inc.
Issue: F006
Subissue: Analytical Method
Response:

The Agency acknowledges concerns about Method 9010 of SW-846 for detection of total and amenable cyanides for nonwastewaters. In today's final rule, EPA is promulgating an amendment to Method 9010 used for analyzing wastes containing cyanides.

EPA does not believe that this promulgated clarification to the analytical method affects the achievability of the cyanide standards already promulgated. In fact, the sample size and the distillation time used to develop the treatment standards for F006, F007, F008, and F009 nonwastewaters were 10 grams and 1 hour and 15 minutes, respectively (see RCRA Docket LD10-L0032, letter dated May 1, 1989). The Agency subsequently has solicited information from several treaters of cyanide wastes, who indicated to the Agency during the Second Third rulemaking that they were achieving the F006 nonwastewater cyanide standard in terms of the sample size and distillation time they were using. These facilities stated that they use a sample size of less than 5 grams and a distillation time of 1 hour (see administrative record for cyanide wastes in today's notice), again within the range being promulgated today. Therefore, the Agency believes that the data in the Second Third rule documenting achievability of the cyanide treatment standard reflects the analytical procedure being promulgated today.

Comment Number: 20 - D - 3
Docket Number: L D12 - 00122.
Commenter: Deere + Company
Issue: F006
Subissue: Analytical method
Comment:

3. The standard for amenable cyanide should be dropped until the problems with the analytical method are corrected and the analysis can be performed reliably.

Comment Number: 20-D-3

Docket Number: LD12-00122

Commenter: Deere & Company

Issue: F006

Subissue: Analytical Method

Response:

The Agency acknowledges the comment stating that standards for amenable cyanide should be dropped till a corrected methodology can be found. In today's final rule, EPA is promulgating an amendment to Method 9010 used for analyzing wastes containing cyanides.

The Agency wants to point out that F006 nonwastewater standards were promulgated in the Second Third Rule. In developing the treatment standards, EPA first characterizes the waste(s). As necessary, EPA may establish treatability groups for wastes having similar physical and chemical properties. That is, if EPA believes that wastes represented by different waste codes could be treated to similar concentrations using identical technologies, the Agency combines the codes into one treatability group. EPA generally considers wastes to be similar when they are both generated from the same industry and from similar processing stages. In addition, EPA may combine two or more separate wastes into the same treatability group when data are available showing that the waste characteristics affecting performance are similar or that one waste would be expected to be less difficult to treat.

Once the treatability groups have been established, EPA collects and analyzes data on identified technologies used to treat the wastes in each treatability group. The technologies evaluated must be demonstrated on the waste or a similar waste and must be available for use.

Comment Number: 20-D-3 (continued)
Docket Number: LD12-00122
Commenter: Deere & Company
Issue: F006
Subissue: Analytical Method
Response:

The Agency is regulating total and amenable cyanides as opposed to extractables. The Agency has reviewed the data submitted by commenters on the level of leachable cyanides and the analysis of the data appears in the background document for cyanide wastes and in the administrative record for Third Third proposed rule.

The Agency believes that the legislative history to RCRA Section 3004(M) indicates that Congress intended that the "destruction of tal cyanides would be required as a precondition to land disposal" (130 Congressional Record S9179, July 25, 1984, statement of Senator Chaffee). The treatment standard for the cyanide constituent is based on a total waste analysis for amenable and total cyanide concentration for two reasons. First, the Agency believes that it is necessary to regulate the total concentration of cyanide in wastes that are land disposed, and by basing BDAT standards only on amenable cyanide concentration, the complex-metal cyanides that are present in the wastes would not be regulated. Second, based on the review of the available treatment data, the Agency believes that the conventional cyanide treatment technologies provide substantial treatment of the amenable and total cyanide concentration as measured by a total waste analysis by Method 9010 (EPA Publication SW-846 (see amendment to this method in the Background Document for Cyanide Wastes, May 1990).

EPA does not believe that this promulgated clarification to the analytical method affects the achievability of the cyanide standards

Comment Number: 20-D-3 (continued)
Docket Number: LD12-00122
Commenter: Deere & Company
Issue: F006
Subissue: Analytical Method
Response:

already promulgated. In fact, the sample size and the distillation time used to develop the treatment standards for F006, F007, F008, and F009 nonwastewaters were 10 grams and 1 hour and 15 minutes, respectively (see RCRA Docket LD10-L0032, letter dated May 1, 1989). The Agency subsequently has solicited information from several treaters of cyanide wastes, who indicated to the Agency during the Second Third rulemaking that they were achieving the F006 nonwastewater cyanide standard in terms of the sample size and distillation time they were using. These facilities stated that they use a sample size of less than 5 grams and a distillation time of 1 hour (see administrative record for cyanide wastes in today's notice), again within the range being promulgated today. Therefore, the Agency believes that the data in the Second Third rule documenting achievability of the cyanide treatment standard reflects the analytical procedure being promulgated today.

ISSUE CODE 21: F019 - Aluminum Conversion Coating Treatment Sludges

A.-. Analytical Methodology
B.-. BDAT
C.-. Treatment Standards

Comment Number: 21-A-1

Docket Number: LDR2-00155

Commenter: American Electroplaters and Surface Finishers Society

Issue: F019

Subissue: Analytical Methodology

Comment:

The agency goes on to state that the theoretical cyanide concentration of the diluted waste was 1250 ppm but analyzed at 300ppm. Since F-019 waste contain mostly stable complexed iron cyanide, is this not further indictment of method 9010?

The agency should make an attempt at determining what the reproducibility of method 9010 is at the total ferrocyanide level of the regulation rather than calculating such a value.

Comment Number: 21-A-1

Docket Number: LD12-00155

Commenter: AMERICAN ELECTROPLATERS AND SURFACE FINISHERS SOCIETY

Issue: F019

Subissue: Analytical Methodology

Response:

In today's final rule, EPA is promulgating an amendment to Method 9012 used for analyzing wastes containing cyanides. In fact, the sample size and the distillation time used to develop the treatment standards for F006, F007, F008, and F009 nonwastewaters were 10 grams and 1 hour and 15 minutes (see RCRA Docket LD10-L0032, letter dated May 1, 1989). The Agency has solicited information from several treaters of cyanide wastes, who indicated to the Agency during the Second Third rulemaking that they were achieving the F006 nonwastewater cyanide standard in terms of the sample size and distillation time they were using (see administrative record for cyanide wastes in today's notice).

EPA does not believe that this promulgated clarification to the analytical method affects the achievability of the cyanide standards already promulgated.

The analytical method used to develop the promulgated cyanide standard is Method 9012 using a sample size of 10 grams and a distillation time of 1 hours. Therefore, the Agency is promulgating an amendment to 9012 requiring that in order to comply with this promulgated rule, a sample size of 10g and a distillation time of 1 hour and 15 minutes should be used.

Comment Number: 21-B-1
Docket Number: LD12-00043
Commenter: CyanoKEM
Issue: F019
Subissue: BDAT
Comment:

COMMENTS ON PROPOSED BDAT TREATMENT STANDARDS FOR F019 WASTEWATERS AND NON-WASTEWATERS

Based on our review of the "Proposed Addendum for F019 to the BDAT Background Document for Cyanide Wastes" November 1989 and the proposed rule (40CFR Part 148 et. al. November 22, 1989) CyanoKEM believes that no substantial removal of complexed cyanide has actually been demonstrated for wet air oxidation of the F019 wastewater slurries studied. In fact, this data appears to indicate that substantial percentages of the influent total cyanide concentrations are actually amenable cyanide (ref. Addendum for F019 to the BDAT Background Document for Cyanide Wastes, Table 4-1 where amenable cyanide is 82% of total) and are treatable by alkaline chlorinaton as well as wet air oxidation. For reference to this data, see Appendix F. The proposed non-wastewater treatment standard is calculated from two data sets showing treatment of total cyanide from 293 mg/Kg (241 mg/L as amenable CN) in the influent to an average of 153.8 mg/Kg (accuracy corrected value) in the non-wastewater residue. Since the influent complex cyanide (non-amenable) is only 52 mg/L (as CN) this test data does not clearly demonstrate removal of complex cyanide by wet air oxidation. Actually, the same degree of treatment can be obtained by alkaline chlorination.

CyanoKEM agrees with EPA that treatability tests using UV/ozonation have shown this technology to be substantially ineffective on the range of complex iron cyanide concentrations found in F019 as well as F006 through F009 wastes. In our comments to the second thirds, we indicated results of studies we had performed confirming this (see RCRA Docket LD10).

Comment Number: 21-B-1
Docket Number: LD12-00043
Commenter: CyanoKEM
Issue: F019
Subissue: BDAT
Response:

The Agency acknowledges the commenters remarks regarding wet air oxidation and UV/ozonation technologies on removal of complex iron cyanides.

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006-F009 wastes to F019 wastewaters and nonwastewaters. In evaluation of the data for the wet air oxidation, EPA determined that the data were flawed; however, data received by the Agency indicated that the promulgated standards can be achieved when these wastes are treated by alkaline chlorination. Therefore, the Agency is promulgating treatment standards for amenable and total cyanide in F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination.

Comment Number: 21-B-2
Docket Number: LD12-00127
Commenter: Northwestern Plating Works Inc
Issue: F019
Subissue: BDAT
Comment:

The Agency continues to demonstrate the stability of the iron-cyanide compounds to further treatment in various sections of the proposed third third rule. For example for F019 the Federal Register states on page 48448 that ..."the total cyanide concentration was not substantially reduced, indicating UV ozonation was not an effective treatment for these wastes." The Agency then states ..." review of the waste characterization data for F006 wastes indicates F006 wastes also contain high concentrations of iron-cyanide complexes that are somewhat similar. Based on this information and the fact that F019 wastes could be diluted to levels similar to those found in high iron F006 wastes in order to effect treatment." The Agency continues to skirt the issue that it is calling for some type of further treatment of the high iron cyanide bearing wastes, but does not offer a commercially available treatment to reduce the iron cyanide levels. The best that the Agency offers is to reiterate the treatment chain of alkaline chlorination followed by precipitation and filtration that is the very process that generated the material in question to begin with!

Furthermore the Agency continues to document the stability of iron cyanide compounds and the lack of treatment technologies and facilities to process these materials, yet continues to promulgate a 590 mg/kg total cyanide and 30 mg/kg amenable cyanide standard.

Comment Number: 21-B-2
Docket Number: LD12-00127
Commenter: Northwestern Plating Works
Issue: F019
Subissue: BDAT
Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006 through F009 wastes.

The Agency disagrees with the commenter and is promulgating treatment standards for amenable and total cyanide in F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination. Data received by the Agency indicated that the promulgated standards can be achieved when wastes high in complex cyanides are treated by alkaline chlorination.

Comment Number: 21-B-2
Docket Number: LD12-00127
Commenter: Northwestern Plating Works
Issue: F019
Subissue: BDAT
Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006 through F009 wastes.

The Agency disagrees with the commenter and is promulgating treatment standards for amenable and total cyanide in F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination. Data received by the Agency indicated that the promulgated standards can be achieved when wastes high in complex cyanides are treated by alkaline chlorination.

Comment Number: 21-B-3
Docket Number: LD12-00137
Commenter: USPCI, Inc.
Issue: F019
Subissue: BDAT
Comment:

H. F019

USPCI urges EPA to set an immediately effective cyanide standard for this waste based upon alkaline chlorination. USPCI supports this option because the technology is currently available as opposed to the wet air oxidation technology which is currently unavailable.

Comment Number: 21-B-3
Docket Number: LD12-00137
Commenter: USPCI, Inc.
Issue: F019
Subissue: BDAT
Response:

The Agency acknowledges support for treatment standards for amenable and total cyanide in the F019 wastewaters and nonwastewaters based on performance of alkaline chlorination. The Agency is promulgating treatment standards for amenable and total cyanide based on the performance of alkaline chlorination.

Comment Number: 21 - B - 4

Docket Number: LD12-00143

Commenter: General Motors Corporation

Issue: F019

Subissue: BDAT

Comment:

Proposed Treatment Standards for F019 Wastes

On page 48448, EPA discussed "apparent discrepancies" in test data for wet air oxidation of F019 wastes, and proposed two options for treatment standards. GM believes more testing will be necessary to show that the process is appropriate for these wastes.

Comment Number: 21-B-4

Docket Number: LD12-00143

Commenter: General Motors Corporation

Issue: F019

Subissue: BDAT

Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006 through F009 wastes.

The Agency agrees with the commenter that more testing would be needed to show that wet air oxidation is appropriate for F019, however, the Agency believes that the data for alkaline chlorination is adequate to show that the technology is BDAT for F019. Therefore, the Agency is setting treatment standards for amenable and total cyanide in the F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination.

Comment Number: 21-B-5
Docket Number: LD12-00180
Commenter: FORD
Issue: F019
Subissue: BDAT
Comment:

Proposed Treatment Standard for F019 (III.A.6.a.2)
We have recently reviewed a draft document entitled "Characterization and Treatment of Wastes from Metal-Finishing Operations" prepared for EPA by PEI Associates, Inc. While we have not yet reviewed the Background Document for F019 wastes, it appears that the proposed treatment standards were calculated from data obtained during a bench scale test of a wet-air oxidation (WAO) unit using waste from the Ford Connersville, Indiana plant. It should be noted that several analytical discrepancies in the data obtained by the EPA contract consultant could not be explained. In analyzing the F019 filter cake from our wastewater treatment plant, low spike recoveries (<5%) were obtained for total cyanide analysis of 2470 mg/kg; amenable cyanide could not be determined due to interference. A sample of raw waste from the process obtained for WAO testing was analyzed to contain 5000 mg/kg total cyanide. However, when the waste was diluted 4 to 1 for the WAO test, total cyanide was analyzed to be only 293 mg/l instead of the expected 1250 mg/l. Of this 293 mg/l total cyanide, 240 mg/l was analyzed as amenable cyanide. Previous studies have shown this waste to be comprised of very stable complex ferricyanide compounds, very little of which is amenable to chlorination.

While EPA is proposing to grant a two year capacity variance based on a lack of capacity to treat these wastes, it was noted in the referenced report that there are currently no full-scale WAO systems in commercial operation for cyanide treatment. We encourage EPA to investigate whether full-scale WAO systems are currently being designed, permitted and installed to insure adequate capacity in two years.

Comment Number: 21-B-5
Docket Number: LD12-00180
Commenter: Ford
Issue: F019
Subissue: BDAT
Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006 through F009 wastes.

The Agency agrees with the commenter that the data for wet air oxidation were flawed. Therefore, the Agency is setting treatment standards for the amenable and total cyanide in the F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination. Data received by the Agency indicates that the complex cyanides can be broken down and the promulgated standards can be achieved when these wastes are treated by alkaline chlorination.

Comment Number: 21-B-6

Docket Number: LD12-00282

Commenter: Circle-Prosco Inc.

Issue: F019

Subissue: BDAT

Comment:

6. At this time, it appears to us that EPA's decisions about this matter are time driven rather technology driven. The data gathered during their investigation on F019 wastewaters and non-wastewaters were inconclusive at best. The Agency states that wet air oxidation is ineffective for iron complexed cyanide (54 FR 31679). Further, in our survey of the treatment industry, no wet air oxidation vendor would claim that their process would be effective for iron complexed cyanide, although it might be for other cyanide complexes. Yet EPA was willing to set BDAT treatment standards based on discrepant test data without sufficient evidence that they are achievable for F019 wastewater and non-wastewater.

Comment Number: 21-B-6

Docket Number: LD112-00282

Commenter: Circle-Prosco, Inc.

Issue: F019

Subissue: BDAT

Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006 through F009 wastes.

The Agency agrees with the commenter that the data for wet air oxidation were flawed. Therefore, the Agency is promulgating treatment standards for the amenable and total cyanide in the F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination.

Comment Number: 21-B-7

Docket Number: LD12-00282

Commenter: Circle-Prosco Inc.

Issue: F019

Subissue: BDAT

Comment:

5. Furthermore, to compound the dilemma in which industry finds itself, the Agency suggested that we dilute F019 wastewaters and non-wastewaters to make them coincide with concentrations similar to F006 wastewaters and non-wastewaters to facilitate transfer of treatment standards from F006 to F019. The Agency believes the industry would then be better able to achieve the treatment standards (54 FR 48448-9). We disagree with this notion on the grounds that it generates (1) a larger quantity of waste than we started with, (2) it calls for verification of treatable F006 wastes, and (3) increased storage capacity for dilution processes and all of the other ramifications associated with this notion.

Comment Number: 21-B-7
Docket Number: LD12-00282
Commenter: Circle-Prosco Inc.
Issue: F019
Subissue: BDAT
Response:

The Agency disagrees with the commenter regarding industries beliefs on the treatment of F019 wastewaters and nonwastewaters. The decision to transfer treatment standards from F006-F009 to F019 wastewaters and nonwastewaters was a technical decision based on similar concentrations of complex iron cyanides and on the treatment ability of alkaline chlorination. The Agency is not suggesting diluting F019 wastewaters and nonwastewaters to make them coincide with similar concentrations of F006-F009 wastes. On the other hand, a treater may dilute the waste to achieve effective treatment. The amount of dilution is dependent upon effective treatment not on diluting the waste to make it look similar to F006-F009 wastes. The Agency is promulgating the treatment standards based on a transfer of performance data for alkaline chlorination for F006-F009 wastes.

Comment Number: 21-B-8

Docket Number: LD12-00155

Commenter: American Electroplaters and Surface Finishers Society

Issue: F019

Subissue: BDAT

Comment:

4. TREATMENT STANDARDS FOR F-019

The agency confuses industry when on one hand it strictly forbids dilution of a waste stream for the purpose of reducing the hazardous nature of a waste and then goes on to describe how the agency "diluted" an F-019 waste containing 5000 mg/Kg of complexed cyanide four to one with water in order to fluidize the waste. We understand that blending of waste streams is a viable method of handling wastes prior to treatment, but here the agency clearly describes its own use of dilution with water to supposedly effect treatment.

Comment Number: 21-B-8
Docket Number: LD12-00155
Commenter: American Electroplaters and Surface Finishers Society
Issue: F019
Subissue: BDAT
Response:

The Agency does forbid dilution of a waste stream below the promulgated treatment standard without treatment. The reason behind the dilution of an F019 waste containing high concentrations of complexed cyanides applies to the nature of wet air oxidation. The process requires a lower influent concentration. The waste was diluted solely for the purpose of treatment. However, upon further examination of the data, the Agency determined that the data were flawed.

The Agency is promulgating treatment standards for the amenable and total cyanide in F019 wastewaters and nonwasatewaters based on the performance of alkaline chlorination. However, it should be noted that a treater may dilute the F019 waste to achieve effective treatment. The amount of dilution is dependent upon effective treatment not on diluting the waste to make it look similar to F006-F009 wastes.

1 of 2

Comment Number: 21 - B - 9
Docket Number: LD12 - 00231
Commenter: L. E. Lancy
Issue: F019
Subissue: BDAT
Comment:

When writing the regulatory requirements for solid wastes, the Agency did not consider the difference between the soluble and the insoluble forms of the unreactive cyanide complexes (primarily iron cyanides). While the alkali metal iron cyanides (K, Na, Ca, Li) are soluble and, therefore, amenable for ozone ultraviolet or wet oxidation treatment, the insoluble iron cyanides (Cu, Zn, Fe) are close to refractory. They are not available to react in such processes. The soluble iron cyanides are leachable and, therefore, the concentration can be controlled by the TCLP toxicity test procedure; the insoluble cyanides are not leachable under any known conditions that could prevail in a landfill.

Treatment standards for non-wastewater metal finishing wastes, F006-F012, promulgated under the Second Third and those proposed for F019 under the Third Third indirectly stipulate the use of SW-846 Method 9010 to determine compliance with cyanide content limits on the whole waste. Compliance on all other parameters in this group of wastes is based upon constituent concentration in a waste extract. In Method 9010 a waste sample is subjected to concentrated boiling sulfuric acid for one hour in order to release those cyanides which have been tightly complexed as insoluble ferrocyanides. These conditions are appropriately chosen for analytical purposes, but, as far as we know, are not representative of any chemical reaction naturally occurring in the environment which could solubilize these inert precipitates. Their "toxic" or "hazardous" nature is an artifact of the Agency's creation. In fact, even the soluble ferrocyanides have very low toxicity. That is the reason they are used routinely as an additive to road salt mixes across the country as an anticaking agent. These very same compounds which the EPA intends to stringently restrict are routinely spread across our highways each winter.

I hope that this explanation will help the Agency to understand the discrepancies reported in the Proposed Regulation of November 22 regarding ozone ultraviolet, wet oxidation, etc. The analytical anomaly described therein can't be easily elucidated -- why did the make-up for the wet oxidation that should have been 1250 mg/l complex cyanides analyze only as 300 mg/l and mainly as amenable cyanide? The breakdown to amenable cyanide could be explained possibly as photodecomposition due to insufficient care in sample preparation. Due to lack of needed data, I can only postulate that the insoluble complex cyanide was unchanged after wet oxidation. This would also be the case with ozone because neither treatment which has been proposed by the regulation can be effective. The only feasible way to meet the Agency's present regulation is by dilution -- that is by judiciously blending various F006-F012 and F019 wastes ahead of the landfill solidification proces, or by mixing in other solid waste such as from pickle acid neutralization, or by large additions of aggregate with the cementitious soldification mix, etc.

Comment Number: 21-B-9
Docket Number: LD12-00231
Commenter: L. E Lancy
Issue: F019
Subissue:
Comment:

My recommendation is to change the regulation to apply to soluble total cyanide only (i.e., to the total cyanide found in a leachate such as from TCLP). I agree, on the other hand, that all of these considerations are equally applicable to F006-F012, as well as F019. If these recommendations are per chance accepted, the Agency should include cautionary remarks in their procedure that the leaching process should be conducted with the exclusion of light to avoid the potential for confusion over amenable cyanides which were not previously detectable.

COMMENT NUMBER: 21-B-9

DOCKET NUMBER: LD12-00231

COMMENTER: L. E. Lancy

ISSUE: F019

SUBISSUE: BDAT

RESPONSE:

The Agency disagrees with the commenter regarding soluble and insoluble complex cyanides. Congress' intention was to treat and destroy all cyanides, not just prevent leaching in a landfill.

The Agency disagrees with the commenter's evaluation of wet air oxidation data. If a sample is properly preserved, and handled even remotely close to EPA's handling procedures, the values of cyanide should remain constant for a couple of weeks. However, if the process producing the cyanide effluent is employing a cyanide destroying treatment before discharge, the effluent is considered unstable and cyanide destruction will continue. Destruction will continue after exiting from mechanism providing treatment.

However, the Agency does agree that the data available for wet air oxidation were flawed. Therefore, the Agency is promulgating treatment standards based on transfer of standards from alkaline chlorination of F006-F009 wastes. These F006-F009 wastes also contained high concentrations of complex cyanides.

Method 9010 was designed to determine total cyanide not to represent environmental conditions. The Agency also wishes to point out that when complexed cyanides are present, magnesium chloride is added to destroy the complex, although the digestion for all cyanides is completed with sulfuric acid.

Comment Number: 21 - C - 1
Docket Number: LDR2 -00043
Commenter: CyanoKEM
Issue: F019
Subissue: Treatment Standards
Comment:

On this basis, CyanoKEM recommends that EPA transfer the concentration based standards for F006-F009 based on the performance of alkaline chlorination for F006 through F009 wastes. Therefore, the non-wastewater standards of 590 mg/Kg T-CN and 30 mg/Kg are more appropriately applied to F019 since the concentrations of complex (non-amenable cyanide) in these wastes are similar to the concentrations found in F006 through F009 wastes.

The BDAT background document developed by EPA for the second thirds cyanide waste codes (June 1989) discusses F019 wastes on page 5-19 as containing very high levels of complex iron cyanides. To quote:

> "The Agency believes that F019 wastes are in a different treatability group because of the high concentration of iron complex cyanides in both the wastewaters and non-wastewaters." "Recovery or reuse of the iron cyanides is also being considered. The Agency believes that the source of the iron complex cyanides is the soluble ferrocyanide compounds (such as potassium ferrocyanide) that are used as constituents in aluminum conversion coating compounds or baths. Therefore, the only cyanides present in these conversion coating baths would be the iron complex cyanides that are used as a component of the coating. The Agency believes that F019 non-wastewaters or the wastewater treated to generate this waste have substantial concentrations of iron complex cyanides and cannot be treated by conventional oxidation-reduction processes. The Agency believes that the source of iron for the F019 waste is a legitimate source of iron and also believes that the F019 is a different subgroup within the metal finishing industry treatability group."

Based on the substantial complex iron cyanide content in these wastes, which EPA suggests here could be higher than is found in even common metal finishing wastes, EPA should set at least the same standard as was set for metal finishing waste, but certainly not lower. We recommend that the Agency technology transfer the cyanide standard for the F006 thru F009 non-wastewater.

Comment Number: 21-C-1
Docket Number: LD12-00043
Commenter: CyanoKEM
Issue: F019
Subissue: Treatment Standards
Response:

The Agency acknowledges the commenter's support for transfer of treatment standards for F006-F009 and is setting treatment standards for the amenable and total cyanide in the F019 nonwastewaters based on the transfer of performance data available for the alkaline chlorination for F006-F009 wastes.

The wastewater treatment standards are based on alkaline chlorination data from the Office of Water's "Development Document for Effluent Limitations Guidelines and Standards for Metal Finishing," pages VII-126 through VII-153.

Comment Number: 21 - C - 2

Docket Number: LD12 - 00110

Commenter: ThermalKEM / CyanoKEM

Issue: F019

Subissue: Treatment Standards

Comment:

In addition, we agree with EPA that the F019 non-wastewater BDAT treatment standards for total chromium should be transferred from the standards developed for F006 through F009 waste.

Comment Number: 21-C-2
Docket Number: LD12-00110
Commenter: ThermalKEM/CyanoKEM
Issue: F019
Subissue: Treatment Standards
Response:

The Agency acknowledges the commenter's support for treatment standards for total chromium in F019 nonwastewaters based on transfer of performance data from the stabilization of F006 wastes.

1 of 2

Comment Number: 21-C-3
Docket Number: LD12-00110
Commenter: ThermalKEM/CyanoKEM
Issue: F019
Subissue: Treatment Standard
Comment:

VI. COMMENTS ON PROPOSED BDAT TREATMENT STANDARDS FOR F019 WASTEWATERS AND NON-WASTEWATERS

Based on our review of the "Proposed Addendum for F019 to the BDAT Background Document for Cyanide Wastes" November 1989 and the proposed rule (40CFR part 148 et. al. November 22, 1989), we find that no substantial removal of complexed cyanide has actually been demonstrated for wet air oxidation of the F019 wastewater slurries studied. In fact, this data appears to indicate that substantial percentages of the influent total cyanide concentrations are actually amenable cyanide (ref. Addendum for F019 to the BDAT Background Document for Cyanide Wastes, Table 4-1 where amenable cyanide is 82% of total) and are treatable by alkaline chlorination as well as wet air oxidation. The proposed non-wastewater treatment standard is calculated from two data sets showing treatment of total cyanide from 293 mg/Kg (241 mg/L as amenable CN) in the influent to an average of 153.8 mg/Kg (accuracy corrected value) in the non-wastewater residue. Since the influent complex cyanide (non-amenable) is only 52 mg/L (as CN) this test data does not clearly demonstrate removal of complex cyanide by wet air oxidation. Actually, the same degree of treatment or better can be obtained by alkaline chlorination.

On this basis, we recommend that EPA transfer the concentration based standards for F006-F009 based on the performance of alkaline chlorination for F006 through F009 wastes. Therefore, the non-wastewater standards of 590 mg/Kg T-CN and 30 mg/Kg are more appropriately applied to F019 since the concentrations of complex (non-amenable cyanide) in these wastes are similar to the concentrations found in F006 through F009 wastes.

2 of 2

Comment Number: 21-C-3 (con't)

Docket Number: LD12-00110

Commenter: ThermalKEM / CyanoKEM

Issue: F019

Subissue: Treatment Standard

Comment:

The BDAT background document developed by EPA for the second thirds cyanide waste codes (June 1989) discusses F019 wastes on page 5-19 as containing very high levels of complex iron cyanides. To quote:

> "The Agency believes that F019 wastes are in a different treatability group because of the high concentration of iron complex cyanides in both the wastewaters and non-wastewaters. Recovery or reuse of the iron cyanides is also being considered. The Agency believes that the source of the iron complex cyanides is the soluble ferrocyanide compounds (such as potassium ferrocyanide) that are used as constituents in aluminum conversion coating compounds or baths. Therefore, the only cyanides present in these conversion coating baths would be the iron complex cyanides that are used as a component of the coating. The Agency believes that F019 non-wastewaters or the wastewater treated to generate this waste have substantial concentrations of iron complex cyanides and cannot be treated by conventional oxidation-reduction processes. The Agency believes that the source of iron for the F019 waste is a legitimate source of iron and also believes that the F019 is a different subgroup within the metal finishing industry treatability group."

Based on the substantial complex iron cyanide content in these wastes, which EPA suggests here could be higher than is found in even common metal finishing wastes, EPA should set at least the same standard as was set for metal finishing waste, but certainly not lower. We recommend that the Agency technology transfer the cyanide standard for the F006 through F009 non-wastewater.

Comment Number: 21-C-3
Docket Number: LD12-00110
Commenter: ThermalKEM/CyanoKEM
Issue: F019
Subissue: Treatment Standards
Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006 through F009 wastes.

Since the wet air oxidation data was flawed and alkaline chlorination data shows wastes can be treated to promulgated treatment standards based on treatment of F006-F009 wastes and data from the Office of Water's "Development Document for Effluent Limitations Guidelines and Standards for Metal Finishing," the Agency is setting treatment standards for the amenable and total cyanide in the F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination.

The Agency acknowledges the commenter's support for promulgating treatment standards for F019 based on the transfer of F006-F009's alkaline chlorination performance data.

Comment Number: 21 – C-4
Docket Number: LD12 - 00172
Commenter: HWTC
Issue: F019
Subissue: Treatment Standard
Comment:

In addition, the HWTC agrees with EPA that the F019 non- wastewater BDAT treatment standards for total chromium should be transferred from the standards developed for F006 through F009 waste.

Comment Number: 21-C-4

Docket Number: LD12-00172

Commenter: HWTC

Issue: F019

Subissue: Treatment Standards

Response:

The Agency acknowledges the commenter's support for transferring the F006 standard for total chromium to F019 nonwastewaters.

Comment Number: 21-C-5
Docket Number: LD12-00113
Commenter: Michigan Disposal, Inc
Issue: F019
Subissue: Treatment Standard
Comment:

2. F019 AND OTHER PLATING WASTES

The treatment standards for BDAT treatment of electroplating wastes introduced by the HSWA Rules present many difficulties for TSDF's and generators in attempting to segregate these wastes and treat for cyanides and the various metals present.

A large investment of time and money has been necessary to research and develop systems to treat such wastes to standards established in the first and second thirds. F019 standards were not an issue at that time so F019 waste was handled as a F006/7/8 waste with respect to the cyanide levels (590 ppm total, 30 ppm reactive) and the metals (Cd, Cr, Ni Pb and Ag). The systems treating such wastes adequately treat F019 wastes.

The proposed Third Third rules introduce new, lower treatment standards for cyanide (390 ppm total and 20 ppm amendable). The wastewater treatment ranges for total metals in F019 also differ from F006. Michigan Disposal Incorporated sees no advantage gained by lowering this standard. TSDF's have limited storage, treatment and holding capacity. Stabilization TSDF's currently commingle similar, compatible wastes with codes F006, F007, F008 and F019. The change in the F019 rules will require costly waste segregation and process changes for negligible additional environmental benefit.

Comment Number: 21-C-5
Docket Number: LD12-00113
Commenter: Michigan Disposal, Inc.
Issue: F019
Subissue: Treatment Standards
Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006-F009 wastes.

Since the wet air oxidation data were flawed and alkaline chlorination data shows wastes can be treated to promulgated threatment standards based on treatment of F006-F009 wastes and data from the Office of Water's "Development Document for Effluent Limitations Guidelines and Standards for Metal Finishing," the Agency is setting treatment standards for the amenable and total cyanide in the F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination.

The Agency acknowledges the commenter's support for promulgating standards for F019 based on the transfer of the performance data from F006-F009.

Comment Number: 21 - C-6

Docket Number: LD12-00130

Commenter: Wayne Disposal. Inc.

Issue: F019

Subissue: Treatment Standard

Comment:

B. F019 AND OTHER PLATING WASTES

The treatment standards for BDAT treatment of electroplating wastes introduced by the HSWA Rules present many difficulties for TSDF's and generators in attempting to segregate these wastes and treat for cyanides and the various metals present.

A large investment of time and money has been necessary to research and develop systems to treat such wastes to standards established in the first and second thirds. F019 standards were not an issue at that time so F019 waste was handled as a F006/7/8 waste with respect to the cyanide levels (590 ppm total, 30 ppm reactive) and the metals (Cd, Cr, Ni Pb and Ag). The systems treating such wastes adequately treat F019 wastes.

The proposed Third Third rules introduce new, lower treatment standards for cyanide (390 ppm total and 20 ppm amendable). The wastewater treatment ranges for total metals in F019 also differ from F006. Michigan Disposal Incorporated sees no advantage gained by lowering this standard. TSDF's have limited storage, treatment and holding capacity. Stabilization TSDF's currently commingle similar, compatible wastes with codes F006, F007, F008 and F019. The change in the F019 rules will require costly waste segregation and process changes for negligible additional environmental benefit.

Comment Number: 21-C-6

Docket Number: LD12-00130

Commenter: Wayne Disposal Inc.

Issue: F019

Subissue: Treatment Standards

Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006-F009 wastes.

Since the wet air oxidation data were flawed and alkaline chlorination data shows wastes can be treated to promulgated threatment standards based on treatment of F006-F009 wastes and data from the Office of Water's "Development Document for Effluent Limitations Guidelines and Standards for Metal Finishing," the Agency is setting treatment standards for the amenable and total cyanide in the F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination.

The Agency acknowledges the commenter's support for promulgating standards for F019 based on the transfer of the performance data from F006-F009.

Comment Number: 21-C-7

Docket Number: LD12-00143

Commenter: General Motors Corporation

Issue: F019

Subissue: Treatment Standard

Comment:

In addition, the comparison of F019 wastes to F006 waste streams indicates similar high concentrations of complexed iron cyanide compounds. The second option would establish treatment standards based on the transfer of F006-F009 treatment by alkaline chlorination. GM believes this to be more appropriate, and recommends adoption of this second option.

Comment Number: 21-C-7

Docket Number: LD12-00143

Commenter: General Motors Corporation

Issue: F019

Subissue: Treatment Standards

Response:

The Agency acknowledges the commenter's support of F019 treatment standards based on the transfer of F006-F009 alkaline chlorination performance data.

Comment Number: 21- C-8

Docket Number: LD12-00155

Commenter: American Electroplaters and Surface Finishers Society

Issue: F019

Subissue: Treatment Standard

Comment:

The agency then goes on to state that despite the analytical problem, the data indicates that significant destruction of cyanide was achieved by the technology. How can such statements be made when the agency admits that its own data indicated that the analytical procedure may yield a test result that is in error by 300%! The agency proposes two options for F-019 non wastewaters: a concentration based standard based on the performance of wet air oxidation with a data base that the agency admits has questionable accuracy, and a concentration based standard based on F-006-F009 wastes (not stated but presumed to be 590 mg/Kg of total cyanide and 30 mg/Kg of cyanide amenable to chlorination.

It is our opinion that F-019 wastes clearly resemble F-006 wastes from cyanide plating on ferrous substrates and that these wastes be included in the new subcategory suggested above. Should the formation of a new subcategory be rejected by the agency, we urge that F-019 wastes be given the same treatment standards as those for F-006 wastes containing complexed ferrocyanides. We again caution the agency about promulgating cyanide amenable to chlorination standards based on calculations assuming a certain reproducibility of the analytical procedure. Since F-019 wastes contain complexed iron cyanides, we would expect the same kind of analytical problems (high negative numbers) discussed earlier.

Comment Number: 21-C-8
Docket Number: LD12-00155
Commenter: American Electroplaters and Surface Finishers Society
Issue: F019
Subissue: Treatment Standards
Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 which are based on the performance of alkaline chlorination for F006-F009 wastes.

The Agency acknowledges the commenters remarks. However, the Agency does not believe a subcategory for F019 wastes is necessary. The performance of alkaline chlorination of F006-F009 sludges has shown that these treatment standards can be achieved for F019 wastes. Therefore, the Agency is setting treatment standards for the amenable and total cyanide for the F019 wastewaters and nonwastewaters based on the performance data for the alkaline chlorination of F006-F009 wastes. The Agency also acknowledges the commenter's support for the transfer of the F006-F009 performance data for promulgating the treatment standard for F019 if the Agency decided not to form a new subcategory for F019 wastes.

1 of 2

Comment Number: 21 - C - 9
Docket Number: LD12 - 00172
Commenter: HWTC
Issue: F019
Subissue: Treatment Standard
Comment:

C. F019

Based on our review of the "Proposed Addendum for F019 to the BDAT Background Document for Cyanide Wastes" November 1989 and the proposed rule (40 CFR Part 148 et al. November 22, 1989), the HWTC believes that no substantial removal of complexed cyanide has actually been demonstrated for wet air oxidation of the F019 wastewater slurries studied. In fact, this data appears to indicate that substantial percentages of the influent total cyanide concentrations are actually amenable cyanide (ref. Addendum for F019 to the BDAT Background Document for Cyanide Wastes, Table 4-1 where amenable cyanide is 82% of total) and are treatable by alkaline chlorination as well as wet air oxidation. The proposed non-wastewater treatment standard is calculated from two data sets showing treatment of total cyanide from 293 mg/Kg (241 mg/L as amenable CN) in the influent to an average of 153.8 mg/Kg (accuracy corrected value) in the non-wastewater residue. Since the influent complex cyanide (non-amenable) is only 52 mg/L (as CN) this test data does not clearly demonstrate removal of complex cyanide by wet air oxidation. Actually, the same degree of treatment or better can be obtained by alkaline chlorination.

On this basis, HWTC recommends that EPA transfer the concentration based standards for F006-F009 based on the performance of alkaline chlorination for F006 through F009 wastes. Therefore, the non-wastewater standards of 590 mg/Kg T-CN and 30 mg/Kg are more appropriately applied to F019 since the concentrations of complex (non-amenable cyanide) in these wastes are similar to the concentrations found in F006 through F009 wastes.

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Comment Number: 21-C-9 (con't)
Docket Number: LD12-00172
Commenter: HWTC
Issue: F019
Subissue: Treatment Standard
Comment:

The BDAT background document developed by EPA for the second thirds cyanide waste codes (June 1989) discusses F019 wastes on page 5-19 as containing very high levels of complex iron cyanides. To quote:

> "The Agency believes that F019 wastes are in a different treatability group because of the high concentration of iron complex cyanides in both the wastewaters and non-wastewaters. Recovery or reuse of the iron cyanides is also being considered. The Agency believes that the source of the iron complex cyanides is the soluble ferrocyanide compounds (such as potassium ferrocyanide) that are used as constituents in aluminum conversion coating compounds or baths. Therefore, the only cyanides present in these conversion coating baths would be the iron complex cyanides that are used as a component of the coating. The Agency believes that F019 non-wastewaters or the wastewater treated to generate this waste have substantial concentrations of iron complex cyanides and cannot be treated by conventional oxidation-reduction processes. The Agency believes that the source of iron for the F019 waste is a legitimate source of iron and also believes that the F019 is a different subgroup within the metal finishing industry treatability group."

Based on the substantial complex iron cyanide content in these wastes, which EPA suggests here could be higher than is found in even common metal finishing wastes, EPA should set at least the same standard as was set for metal finishing waste, but certainly not lower. We recommend that the Agency technology transfer the cyanide standard for the F006 through F009 non-wastewater.

Comment Number: 21-C-9

Docket Number: LD12-00172

Commenter: HWTC

Issue: F019

Subissue: Treatment Standards

Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006-F009 wastes.

Since the wet air oxidation data were flawed and alkaline chlorination data shows wastes can be treated to promulgated threatment standards based on treatment of F006-F009 wastes and data from the Office of Water's "Development Document for Effluent Limitations Guidelines and Standards for Metal Finishing," the Agency is setting treatment standards for the amenable and total cyanide in the F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination.

The Agency acknowledges the commenter's support for promulgating treatment standards for F019 based on the transfer of F006-F009's alkaline chlorination performance data.

Comment Number: 21 - C-10
Docket Number: LD12-00180
Commenter: FORD
Issue: F019
Subissue: Treatment Standard
Comment:

EPA should adopt treatment standards based on the WAO performance (after clarifying the attendant analytical problems) or transfer treatment standards based on alkaline chlorination of F006 through F009 wastes. The data now in existence does not provide a basis for us to recommend that EPA set treatment standards based on either of these two options. EPA should continue to investigate the most appropriate treatment and analytical methods for these wastes. If in the next two years, EPA determines that different treatment standards or methods are more appropriate for these wastes or that WAO is not commercially available, EPA can revise the standards at that time. It should be noted that page 13 of the subject report states that ferrocyanide complexes are 200 to 300 times less toxic than free cyanide and that most investigators consider iron cyanide non-toxic. Because HSWA requires EPA to set treatment standards which substantially diminish toxicity, we question the need to apply restrictive treatment standards to ferrocyanide processes which already possess substantially diminished toxicity properties compared to other cyanide-containing wastes and some other F019 wastes.

Comment Number: 21-C-10
Docket Number: LD12-00180
Commenter: FORD
Issue: F019
Subissue: Treatment Standards
Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006 through F009 wastes.

The Agency agrees with the commenter that the data for wet air oxidation were flawed. Therefore, the Agency is setting treatment standards for the amenable and total cyanide in the F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination. Data received by the Agency indicates that the complex cyanides can be broken down and the promulgated standards can be achieved when these wastes are treated by alkaline chlorination.

EPA wishes to point out that the criteria used by the Land Disposal Restrictions Program to make a determination of toxicity or what is harmful to human health and the environment is not based on the same criteria as that of the Delisting Petition Program. Through the Land Disposal Restrictions Programs, the Agency has stated that complex iron cyanides are harmful to human health and the environment in both the First Thirds and the Second Thirds final rules.

Comment Number: 21 - C - 11
Docket Number: LD12 - 00272
Commenter: General Dynamics
Issue: F019
Subissue: Treatment Standard
Comment:

The EPA is also proposing to transfer the F006 standard for total chromium to F019 non-wastewaters (5.2 mg/L). We support the EPA in doing so.

Comment Number: 21-C-11

Docket Number: LD12-00272

Commenter: General Dynamics

Issue: F019

Subissue: Treatment Standards

Response:

The Agency acknowledges the commenter's support for transferring the F006 standard for total chromium to F019 nonwastewaters.

Comment Number: 21-C-12
Docket Number: LD12-00272
Commenter: General Dynamics
Issue: F019
Subissue: Treatment Standard
Comment:

On p.48448 of the proposal, the agency admitted a flaw in their analysis of cyanide concentration in the influent to a wet air oxidation process. A concentration of 1,250 ppm cyanides was expected, but the actual measured concentration was only 300 ppm. The effluent concentration, after wet air oxidation, was not even mentioned. Despite the flaw, the EPA is still recommending wet air oxidation as the process for cyanide destruction. We do not support this proposal.

As an alternative, the EPA is offering to transfer the F006 cyanide limits to F019 wastes. We support this standard as we did in the Second 3rd. We wish to point out, however, that the text says 590 mg/kg while the table lists 390 mg/kg as the standard. We assume that this is a misprint, and the standard is 590 mg/kg.

Comment Number: 21-C-12
Docket Number: LD12-00272
Commenter: General Dynamics
Issue: F019
Subissue: Treatment Standards
Response:

The Agency acknowledges support of F019 treatment standards based on the transfer of F006-F009 treatment by alkaline chlorination.

The Agency also appreciates the commenter pointing out a misprint in the table listing cyanide limits. The nonwastewater standards for F019 should be 590 mg/kg of total cyanide and 30 mg/kg of cyanide amenable to chlorination.

Comment Number: 21 - C-13
Docket Number: LD12-00282
Commenter: Circle - Prosco Inc.
Issue: F019
Subissue: Treatment Standard
Comment:

9. We reiterate our claim that a thorough investigation of the chemistry of F019 wastes should be made before treatment standards are set. The stability constants for the iron cyanide complexes are 10[illegible] and 10[illegible], respectively (54 FR 31676) and (Basolo, Coordination Chemistry of Complex Metal Ions, W. A. Benjamin Press, New York). These high stability constants lead us to believe that iron complex cyanides are not likely to dissociate. Basolo states that REDOX reactions of complex iron cyanides are relatively fast, however, atomic rearrangements, i. e., Fe, C, or N atoms is very slow or nearly an inert substitution reaction (Basolo, Coordination Chemistry, 2nd Rev., Whiteside Litho Ltd.). Consequently, the decomposition of Ferri- and Ferrocyanide complexes under ordinary circumstances is practically nil.

10. It is interesting to note that in 53 FR 36070, the Agency understood the chemistry of iron complex cyanides and approved a delisting petition request based on the fact that high concentrations of iron complex cyanides are stable and do not meet the criteria for which it was listed.

11. Therefore, we are requesting that the Agency reconsider the how it arrived at the treatment standards for F019 wastes and set realistic treatment standards for said wastes. The treatment standards should reflect an accurate evaluation of iron complex cyanide. The stability of the complex should be considered both from a land disposal safety concept and from a difficulty of destruction viewpoint. Finally, treatment standards must be based on verifiable, repeatable experimental data.

Comment Number: 21-C-13
Docket Number: LD12-00282
Commenter: Circle-Prosco Inc.
Issue: F019
Subissue: Treatment Standards
Response:

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. The second option proposed to transfer the concentration-based treatment standards for F006-F009 based on the performance of alkaline chlorination for F006-F009 wastes.

Data availavle to the Agency on the performance of alkaline chlorination of F006-F009 sludges has shown that promulgated treatment standards for F019 wastes can be achieved. Therefore, the Agency is setting standards for the amenable and total cyanide in the F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination. The Agency believes that these are realistic treatment standards for the F019 wastes.

The Agency continues to examine regulatory standards and analytical methodologies to improve the quality of hazardous waste regulations. However, EPA believes that the available analytical methods are adequate to analyze the waste treatment residuals at the levels set for the treatment standards.

1 of 2.

Comment Number: 21-C-14
Docket Number: LD12-00282
Commenter: Circle-Prosco, Inc.
Issue: F019
Subissue: Treatment Standard
Comment:

1. Our comments of 27 February 1989, Docket # F-89-LD10-FFFFP outlined three reasons stating the dissimilarities between F006 and F019 wastewaters and non-wastewaters. A survey of the industry for those who could effectively destroy complex iron-cyanides to proposed BDAT treatment standards set forth in the Background Document yielded no companies with the capability to do so.

2. In June 1989, 54 FR 26608, the Agency's decision was correct in assigning F019 wastes to a different treatability group for the reasons stated. Also, we believe that the residual cyanide in treated F006 non wastewater are iron complexed cyanide formed in situ in the plating processes. The treatment processes required for F006 do not destroy the iron complexed cyanide to any extent, therefore the residual cyanide level for F006 non-wastewaters is not a technology based standard, but a random value based on the iron complexed cyanide content of the samples chosen to formulate the standard. Had the samples used contained twice the input concentration of iron complexed cyanide, the residual value and the resulting treatment standard for cyanide would be twice as high. The use of data from waste treatment vendors that allows for the mixing of different waste streams allows for the manipulation of the results of the process. While this is acceptable for the operation of the treatment vendor, the use of this data to set treatment standards for generators who wish to operate a treatment facility to minimize their waste is improper. We believe there is reduction of total cyanide by the required processes on the F006 wastes due to the oxidation of the ionized cyanide species present in them, but the effect on iron complexed cyanide is nil. Since the processes required for F006 are ineffective treatments for iron complexed cyanide, and iron complexed cyanide is the cyanide constituent of F019 wastes, adopting F006 standards for F019 would be erroneous.

3. The Agency was also correct in stating that higher concentration of iron-cyanide complexes in F019 wastes affects the destruction that is achievable (i.e., they appear to be more difficult to treat).

4. Realizing the difficulty in treating F019 wastewaters and non-wastewaters, the Agency delayed the proposed rule making until November 1989. In the meantime, the Agency investigated

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Comment Number: 21-C-14 (con't)

Docket Number: LD12-00252

Commenter: Circle-Prosco, Inc.

Issue: F019

Subissue: Treatment Standard

Comment:

technologies specifically for destruction of iron-complex cyanides (54 FR 48448). This investigation generated more questions than it answered about the BDAT treatment standards for F019 wastewaters and non-wastewaters. For instance, the Agency accepted the discrepancy between the two contractor's analysis of F019 wastes with no plausible explanation for the wide variance. The contractor chosen to characterize F019 waste produced an analysis consistent with past analyses of the waste. The wet air oxidation study contained analyses that were not consistent with themselves or with the chemistry of F019 systems. Yet, the Agency proposed to set treatment standards based on data which suggested destruction of iron cyanide complexes, even though this analysis did not show iron complex cyanides in the input. Again, this result is not consistent with the characterization of F019 wastes, and should not be the basis for treatment standards. The Agency should reconcile all treatment experiments with their own characterizations of F019 waste. Not only did the different contractors analyses differ, but the wet air oxidation study merely diluted the material and reanalyzed, and these analyses differ by a factor of four after adjusting for the dilution. No quality control spiking was done or reported in the analyses of samples from the wet air oxidation testing that would have demonstrated these discrepancies or refuted them. However, the Agency proceeded, in option one to set BDAT treatment standards for F019 wastes based on this inconclusive information (54 FR 48448-9).

Comment Number: 21-C-14

Docket Number: LD12-00282

Commenter: Circle-Prosco Inc.

Issue: F019

Subissue: Treatment Standards

Response:

The Agency disagrees with the commenter. Comparison of F019 wastes to F006 waste streams indicate similar high concentrations of complexed iron cyanide compounds. Data on treatment of F006-F009 wastes using alkaline chlorination show a breakdown of these complexes.

As your comments on lack of destruction of complex cyanides cannot be substantiated and that the alkaline chlorination data shows wastes can be treated to promulgated treatment standards based on treatment of F006-F009 wastes and data from the Office of Water's "Development Document for Effluent Limitations Guidelines and Standards for Metal Finishing," the Agency is setting treatment standards for the amenable and total cyanide in the F019 wastewaters and nonwastewaters based on the performance of alkaline chlorination.

The Agency believes the commenter misinterpreted the statement by EPA describing F019 wastes as appearing to be more difficult to treat. A higher concentration of complex cyanide does not necessarily affect the destruction that is achievable.

In addition, most of the comment deals with the inadequacy of the data available for wet air oxidation. EPA recognizes the flaws in the data and has decided not to use these data to promulgate treatment standards for F019 wastes.

Comment Number: 21-C-15

Docket Number: LD12-00043

Commenter: CyanoKEM

Issue: F019

Subissue: Treatment Standard

Comment:

CyanoKEM agrees with EPA that the F019 non-wastewater BDAT treatment standards for total chromium should be transferred from the standards developed for F006 through F009 waste.

Comment Number: 21-C-15
Docket Number: LD12-00043
Commenter: CyanoKEM
Issue: F019
Subissue: Treatment Standards
Response:

The Agency acknowledges support for transferring the F006 standard for total chromium to F019 nonwastewaters.